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### OF SOUTH AUSTRALIA.

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T. PASCOE,

*Minister of Agriculture.*

## POINTS FOR PRODUCERS.

### Nitrogenous Fertilisers for Vines.

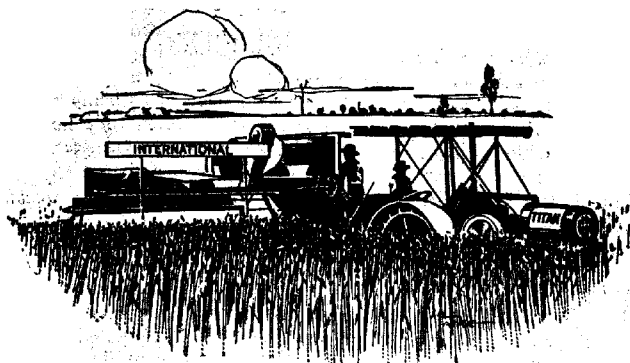
In the original layout of the Government Experimental Orchard at Berri, there were three plots of grape vines of equal size, consisting of Gordos, sultanas, and currants, on which manurial tests were carried out for a number of years. Since the orchard was taken over by the Horticultural Branch of the Department of Agriculture, the tests have been continued, but the method of applying the fertiliser has been somewhat modified. Instead of using a drill for distributing it, the fertiliser has been placed in the bottom of the first three or four furrows on each side of the rows of vines, by means of an attachment between the handles of the plough. Four years have elapsed since this procedure was first adopted. The results in both the crops harvested and the growth shown indicate the great need in these soils for some nitrogenous fertiliser. Owing to its being suitable for mixing with other acid manures, sulphate of ammonia has been used in all cases for supplying the nitrogenous content of any combination, and the effect is very marked, particularly during the time the foliage is on the vines. Whether the sulphate of ammonia is used by itself at the rate of 1 cwt. per acre, or applied with superphosphate, or in conjunction with superphosphate and sulphate of potash, the vines have responded very markedly. It is quite possible that similar results would have been achieved from the use of nitrate of soda or blood manure rich in nitrogen, but the utilisation of these would have involved separate dressings and, consequently, increased the cost of the tests.

### Soil Treatment and Manures for Fruit and Vines.

It is not yet too late to apply readily available fertilisers such as superphosphate, sulphate of ammonia, or nitrate of soda to fruit trees and vines. Before manuring, however, the grower would be wise to endeavor to ascertain whether the treatment of soil has been of such a character as to enable the plant to utilise the plant food already existing in the soil. Instances are frequently met with by the Horticultural Branch of the Department of Agriculture, where trees and vines have been planted in very shallowly prepared soil, with the result that the roots are unable to penetrate sufficiently to enable them to make much progress. In cases such as this, it is very obvious that the first operation necessary is to endeavor to ameliorate the soil condition from the mechanical standpoint, because the application of fertilisers to trees or vines suffering from inability to penetrate the subsoil will be largely a waste of money, and result in disappointment.

### Imported Barley Varieties.

On the experimental plots being conducted by the Department of Agriculture in conjunction with the Millicent Branch of the Agricultural Bureau, a number of varieties of barley are being tested.



## MODERN HARVESTING METHODS.

The harvesting outfit that promises the most grain in the bag at the least expenditure of time and labor is of the greatest importance to the farmer to-day. At the price grain is bringing he cannot afford to lose any through faulty methods, nor can he pay more than is necessary for harvesting and threshing his crop, for his margin of profit is small, and economy in every detail is necessary in order to get a reasonable return for his labor and investment.

This modern harvesting plant, consisting of the **International Reaper-Thresher** and **Titan Kerosene Tractor**, has already proved itself to be a great saver of grain, time, and labor, and is now regarded as the most up-to-date outfit for taking off the crop. With it the grain is cut, threshed, and delivered into bags, which are sewn and dumped ready for removal, while the plant continues at work. This makes it possible to market the crop as fast as it is harvested.

If you are interested in modern harvesting methods, see the I.H.C. local agent for full information on this plant, or write us direct for catalogue.

**International Harvester Company of Australia, Pty., Ltd.,**

**113-114, North Terrace, Adelaide.**

**AGENTS EVERYWHERE.**

Included in this number are varieties imported from France and England. The French varieties include Winter Square, Chevalier (French), Albert, Princess of Svalof; and the English—Improved Champion Chevalier, Improved Goldthorpe, Plumage (Archers), Archer Cavens. These varieties have been selected as being the most productive in the particular countries from which they have been secured, and they will be tried out alongside four varieties grown from seed secured in New Zealand last year, namely:—Kniver's Chevalier, Archer's Chevalier, Binder, Plumage, and, in addition, Duckbill, grown from local seed.

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#### **Oat Varieties at Roseworthy.**

A large number of varieties of oats is being grown this year at the Roseworthy Agricultural College. Of these it is anticipated that there will be available for seed purposes for farmers the following:—Lachlan, Early Burt, Scotch Grey, Kherson, Bathurst Early, and Sunrise. A number of orders for these varieties has already been received, and intending purchasers of seed are recommended to name alternative varieties when ordering, and so obviate disappointment in the event of supplies of any one sort being over applied for.

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#### **Nitrogen for Oranges.**

Just at the present there is on the Government Experimental Orchard at Berri an outstanding illustration of the necessity for applying nitrogenous fertilisers to orange trees. There is a patch of extremely pale, anemic-looking Washington Navel oranges, with fruit thin in the skin but pale on the surface. Adjoining this patch is a plot which has been treated with sulphate of ammonia, and the trees are of a rich green color, and carrying a splendid crop of deep orange colored fruits. The skin of the latter is certainly slightly thicker in texture than that of the former, but the general healthy appearance is a striking indication of the fact that oranges growing under these conditions need nitrogenous fertilisers.

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#### **Lincolnshire Red Shorthorns.**

Since the arrival of the Lincolnshire Red Shorthorn cattle at the Roseworthy Agricultural College, the general condition of the animals has very much improved. In particular two of the females have developed considerably, and promise to grow into large framed cows, capable of producing dual purpose stock. The cows are not due to come into milk until next winter. At the college suitable winter housing accommodation has been provided for the cows, and the bulls have been comfortably housed in separate quarters. The services of the two bulls are available for use on privately owned Shorthorn cows approved by the Principal of the college. The fee has been fixed for each cow at the rate of 10s. 6d., and agistment at the rate of 2s. 6d. per week.

**Eyre Peninsula Experimental Farm.**

On Eyre Peninsula Experimental Farm, and indeed throughout the central hundreds, seeding operations took place under difficulties owing to the scantiness of the rainfall. By the end of July, barely 6in. of rain had been registered at Minnipa. Nevertheless, the Director of Agriculture reports the farm crops to be promising in appearance, although dependent for heavy yields on fairly abundant spring rains. Olive trees, fruit trees, and ornamental trees have made very fair progress, whilst live stock are all in good condition. It is hoped in the present season to complete reticulation from the Yarwendutta Rocks to the main farm buildings.

**Exhibit of Danish, Irish, and Canadian Bacon.**

With the object of enabling the local bacon curers and pig raisers to acquaint themselves with the requirements of the United Kingdom in the way of pig products, the Minister of Agriculture (Hon. T. Pascoe) has, on the advice of the Dairy Branch of the Department of Agriculture, secured samples of Wiltshire bacon from Ireland, Canada, and Denmark. The bacon arrived in South Australia last week, and it will be exhibited at the forthcoming Royal Agricultural and Horticultural Society's show. It is proposed to have two sides from each bale smoked, one side pale dried, and the remaining side left in the green state. One side of the smoked bacon will be cut in order that the public may have the opportunity of judging the type and quality of the bacon which commands the highest prices on the English market. The knowledge that this bacon has been imported has been received with considerable interest in Victoria, and the Victorian Department of Agriculture has communicated with the South Australian department, requesting that it should be made available for display at the forthcoming Melbourne Show. After being displayed in Adelaide, therefore, the bacon will be sent on to Melbourne for exhibition, and subsequently sold there.

**South Australian Grown and Cured Tobacco.**

The crop of tobacco grown by Mr. W. E. Daddow, of Mount Barker, in an experimental way in conjunction with the Department of Agriculture, has been flue-cured. The curing process has been carried out in a most satisfactory manner, and the result is distinctly pleasing. The leaf is of a fine texture and lemon bright color, qualities for which tobacco manufacturers are prepared to pay the highest price.

**South Australia Free from Phylloxera.**

South Australia occupies the unique position of being the only country possessing vineyards covering areas of 30,000 acres or more in which the destructive insect known as phylloxera has not made its appearance. This fact is all the more remarkable when it is recalled that this pest has been located in the Commonwealth for close on half a century, and has practically decimated the vineyards of Victoria and severely injured those of New South Wales. Vinegrowers in those

States are put to a much greater outlay when planting, owing to the need for establishing their vines on one or other of the grape stocks which are resistant to the ravages of this pest. Whilst to a certain extent South Australia's freedom from phylloxera may be attributed to circumstances which make the State an exporter rather than an importer of grape products, the work which the Horticultural Branch of the Department of Agriculture has done during the past 30 years in exercising a close control over plants introduced into the State has played a very important part. The law is such that anyone introducing a grapevine or any portion thereof, excepting the dried fruits, is liable to a fine of £100 or imprisonment up to six months. Although up till the present the law has not been carried out to the extent of obtaining conviction of any person who has been found with plants in his possession when entering the State, numerous instances of ignorance of the law have come under departmental notice from time to time. In each case the plants or cuttings were confiscated and destroyed. One outstanding instance occurred a few years ago, when a grower along the River Murray introduced some thousands of vines overland from Mildura, and planted them on his block. The grower had the mortification of being compelled to pull up and burn the whole of his vineyard in the presence of an inspector, and contribute substantially to the funds of the Phylloxera Board, which has been elected to keep watch on matters of this nature.

#### Curl Leaf.

Those owners of peaches and nectarines who have not already sprayed their trees with one of the standard fungicides, to prevent the attacks of the curl leaf fungus, should, according to the Horticultural Branch of the Department of Agriculture, lose no time in doing the work, because after the expiration of the next week or 10 days it will be probably too late to prevent the disease injuring the trees and jeopardising the prospects of the crop for the coming season.

## FIVE THOUSAND FARMERS WANTED TO GIVE THE NEW ANNUAL CLOVER **HUBAM** A TRIAL ON THEIR FARMS

Hubam grown at Campbelltown, South Australia, attained a height of 6ft. 6in. in four months. Hubam is a **FINE SUMMER FODDER**—gathers nitrogen, enriches the soil; more drought resistant than sudan grass. We will send you a **Free Trial Packet of Seed and Hubam Bulletin** in return for stamped addressed envelope. We have a shipment arriving by the *Canadian Scimitar* this week, and as booking orders while this shipment lasts, but will have no further seed to offer for planting this season.

**PRICE**—11s. per lb., 21s. for 21s., 21s. for 30s.; postage extra—6d., 9d., 1s; payable by post order, cheque, or your post office will deliver seed and collect value. Special price for larger quantities.

Growers guarantee seed **Genuine Hughes' Strain**—99% Germination, 99.99% Purity.

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## INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

Replies supplied by Mr. C. A. LOXTON, B.V.Sc., Government Veterinary Surgeon.]

"R. S.," Mount Gambier, reports death of cows from red water. Inquirer also has other animals suffering with the same complaint.

Reply—You should give a dose of raw linseed oil, and follow twice daily with powdered carbonate of ammonia, one teaspoonful; powdered nuxvomica, one flat teaspoonful, in a pint of water with a cupful of treacle. If improvement does not take place in a few days substitute the following:—Tinct. belladonna, one tablespoonful; tinct. ferri perchloride, one tablespoonful, in a pint of water twice a day.

"E. Bros.," Auburn, have mare 12 years old, discharge from nostrils, swollen tongue, and rough coat.

Reply—The condition of the tongue would account for all the symptoms, and I advise you to put her on the following:—Extract of belladonna, 1/2 oz.; chlorate of potash, 1 oz.; honey, 4 ozs.; glycerine, 4 ozs. (mix). Give about a tablespoonful of this two or three times daily on the tongue. Do not drench her. If the tongue is still swollen use a boracic mouthwash (boracic acid, one tablespoonful; lukewarm water, one pint). Give her soft food.

"F. T.," Coonalpyn, asks if super bags that have been immersed in lime water would have any injurious effect on stock coming into contact with them.

Reply—Bags which have been so treated can have no injurious effect should they come in contact with stock. The effect of lime water is to neutralise the acid superphosphate and form a harmless insoluble phosphate of lime.

"S. R.," Port Lincoln, has aged pony mare, ill for six weeks, stiff in hindquarters, bad cough, and breathes heavily; poor appetite.

Reply—I recommend you to give her a small level teaspoonful of powdered nuxvomica once a day. Mix it with a little treacle, and give it on the tongue. It would be advisable to bring her in and feed her for a week or two. Give her efficient soft food to keep her bowels relaxed. Water her with a bucket, and give her 1 oz. Epsom salts and a teaspoonful of chlorate of potash daily in her drinking water.

Replies supplied by F. MURRAY JONES, B.V.Sc., M.R.C.V.S., Assistant Government Veterinary Surgeon.]

"G. G. C.," Rapid Bay, reports cows that will not get in calf. The Assistant Government Veterinary Surgeon first asks the two following questions:—(1) Have the cows in question aborted or is it they do not hold to the bull after service? (2) Have you any knowledge of any of your cows aborting within the last 18 months?

Reply—If your difficulty is one of failing to hold, try the following:—Inject into each cow one pint of lukewarm water, to which 1 oz. of carbonate of soda has been added. Repeat for six days before submitting to the bull, omitting on the actual day of service.



"S. S. K.," Kingston, has greyhound dog that, after hunting for a little while knocks up and staggers, falls over, and whines as if in pain.

Reply—Throw your dog out of work. Give him comfortable quarters, and administer the following:—Syrup of buckthorn, one desertspoonful. Repeat in seven days. Note carefully whether any pains show after feeding.

"W. B. H.," Bletchley, asks what is the cause of calves scouring and passing blood.

Reply—Calves scouring is generally due to the effects of bacteria gaining access to stomach with food. This is generally found under circumstances where buckets and feeding troughs are not scrupulously clean. Thoroughly scald and thoroughly clean milk receptacle. Feed milk warm, and make available lime water, two cup fuls to each meal.

"D. A. N.," Bald Hills, has three-year-old filly after working two or three hours shows signs of exhaustion; legs swollen and stiff, eyes dull; being fed on rusty chaff.

Reply—I would recommend you to obtain some clean chaff if procurable. Administer one tablespoonful of Fowler's solution of arsenic twice daily in the food. Place one handful of linseed in feed.

"A. B. N.," Wilkawatt, has dog with white film growing over the eyes.

Reply—I recommend him to obtain the following:—Nitrate of silver, 1gr.; distilled water, 1oz. Drop a few drops in eyes two or three times daily with an eye dropper.

"L. J. C.," Kybybolite, reports death of pigs; six stillborn, two died immediately after the sow had farrowed. The remaining two were killed, as they seemed to be in pain. Every care was taken with the sow.

Reply—I am inclined to think the cause of the mortality to the young pigs was the result of some accidental circumstances or injury to the sow whilst running in the yard.

"R. H. N. B.," Willalo, asks what effect does rusty hay have on horses and cattle when fed to them?

Reply—Rusty hay if fed can have no good effects at any time. If fed in any quantity it is likely to produce scouring and other digestive diseases.

"J. J. R.," Rameo, has horse chews food, and after rolling it around in its mouth allows the chaff, &c., to fall to the ground.

Reply—Your animal is probably suffering from some dental trouble. Examine carefully the mouth, gums, and teeth. You may find some rough edges of the teeth projecting and lacerating the cheeks or tongue. If this is so, have the rough edges carefully rasped down. If the tongue or cheek or gums are injured, wash mouth with weak Condy's solution or weak alum solution.

"R. E. W.," Parilla, has cow recently calved that has difficulty in passing water and manure.

Reply—I recommend the following to be given as a drench:—Epsom salts, 12ozs.; powdered ginger, 2ozs.; treacle, 4ozs.; to which add a pint of lukewarm water. Shake until dissolved salts, and administer.

"W. N.," Coomandook, reports cow with teat punctured by barb wire. A small stream of milk runs from the hole.

Reply—Your animal has what is called a fistula of the teat. The remedy is surgical, but this should only be attempted when the cow is dry. The lips of the wounds should then be scraped, and a couple of fine stitches inserted, due care being taken to ensure the wound is clean by using a suitable disinfectant.

"J. C. G.," Grenfell Street, City, asks how long will virus for inoculating keep good in bottles and how can one tell when it is good?

Reply—Virus should not be used one month after collecting, and then every care must be taken to collect it free from contamination, and to have stored at a temperature of about 30deg. On appearance it should be a clear amber color, free from any suspension or deposited material.

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Hoping this is of some use to you,

Yours faithfully;

(Sgd.) LES. J. COLLIVER.

P.S.—I can send you every particular of the Tractor's running cost during the two years of service, also some of my records put up at your own request.

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**DUNCAN MOTORS, LIMITED,** S.A. Distributors,  
Franklin St., Adelaide.

"F. W. S.," Benmark, asks remedy to prevent cow suckling herself.

Reply—There are many ways of prevention. Perhaps the best and most humane is to obtain an old bridle; to this attach one end of a strong broom handle by means of a hole bored into the wood. Pass the other end of the pole between front legs, and fix the end to a surcingle by a fastening through hole bored in the other end of the pole. This allows freedom to graze, at same time preventing animal from reaching the udder.

"J. H. K.," Cleve, reports mare, five years old, heavy in foal, passing a number of white worms; mare rolled on being taken out of the team.

Reply—It is just possible that the trouble was purely a digestive one, and not due to effects of worms. I would advise one pint of raw linseed oil, to which has been added 1oz. of turpentine.

"E. J. P.," Whyte-Yarcowie, reports cow that gave birth to twin calves; three teats of the cow's udder are blind; only one teat would give milk.

Reply—The absence of milk may be due to one of the following causes:—Ill health, debility, chronic diseases of the bag, wasting of the gland from previous disease, or insufficient food, but sometimes will occur suddenly without any appreciable cause. Treatment of course will consist in removing cause of the disease if present, feeding on rich food, with plenty of oil cake, warm mash, stripping the udder, and rubbing with a stimulating liniment.

### GRAFTING GRAPE-VINES.

"Grape-vines are grafted in the springtime, after they have shot out three or four leaves on each spur," says the Horticultural Instructor (Mr. Geo. Quinn) in reply to a correspondent. "Vines to be grafted are sawn off a little below ground level, the stem split carefully, and the wedge-shaped grafts inserted into the split, making the layers which are just underneath the bark meet in the stock and scion. If the stock be split carefully and a wedge inserted into the centre, usually one graft is fitted into the split on either side, and when the wedge is withdrawn the stock clamps the scions or grafts holding them in position; but to be sure, a piece of binder twine is usually bound around the stock. The whole is then covered up with the fine soil until the mound hides the top of the grafts. The grafts or scions are secured in the winter at pruning time and buried in moist sand or soil in the shadiest or coolest position so as to retard any movement of sap and keep the buds dormant. When the time comes for grafting, these are dug up and cut into the lengths so that each scion will only carry two buds. When the operation is completed shoots will soon begin to push through the mound, and when these appear the soil should be carefully scraped away, and if the young shoots are sucken from the stock, they should be rubbed off and the soil mound carefully replaced. This is a most important attention and should not be omitted."

### AGRICULTURAL BUREAU CONGRESS.

Members of the Agricultural Bureau, who are desirous of hearing Capt. S. A. White's lecture, "Overland from Adelaide to Darwin," on Tuesday, September 12th, may secure tickets entitling them to admission from the Secretary, Advisory Board, Department of Agriculture, Adelaide. Congress delegates will be admitted on their attendance slips.

## DEPARTMENTAL DOINGS.

During the month of August the Director of Agriculture (Professor A. J. Perkins) attended Conferences of the Agricultural Bureau at Orroroo and Milang, and also visited the Government Experimental Farm at Minnipa.

### HORTICULTURE.

The Horticultural Instructor (Mr. Geo. Quinn) attended the Conference of representatives of various branches of the fruitgrowing industry, called in Melbourne by the Minister of Customs for the purpose of taking a comprehensive survey of the position of the fruitgrowing industry and endeavoring to form some organisation which might be expected to place the various sections on a better footing.

The Horticultural Instructor for the Southern District (Mr. C. H. Beaumont) addressed and demonstrated before the Pompoora and Hartley Branches of the Agricultural Bureau.

### GENERAL.

The Secretary of the Advisory Board (Mr. H. J. Finnis) attended Conferences of the Agricultural Bureau at Orroroo, Pinnaroo, and Milang. He also visited and addressed the Branches at Lameroo and Hartley.

Mr. F. C. Richards attended and addressed the initial meeting of the Marama Branch.

### DAIRYING.

The Government Dairy Expert (Mr. P. H. Suter) visited Gladstone, Kadina, Orroroo, and Bute, inspecting farms and factories; at the last-named he addressed the local Branch of the Agricultural Bureau.

The Assistant Dairy Expert (Mr. H. J. Apps) visited farms and factories in the Port Pirie, Minlaton, Yorketown, Gawler, and Coonalpyn districts, and addressed a meeting of the Adelaide Dairymen's Association.

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## BROWN ROT OF CITRUS FRUIT.

### ITS OCCURRENCE IN SOUTH AUSTRALIA ON ORANGES.

[By GEOFFREY SAMUEL, B.Sc., the Laboratory of Plant Pathology,  
Department of Botany, University of Adelaide.]

In view of the export trade which South Australian citrus growers hope to establish, all fungus pests which are liable to produce rotting of the fruit, and the methods to be adopted in controlling them, are necessarily of interest. The only one of these which has so far proved of importance in this respect is the common blue mould (species of *Penicillium*), and all growers are now aware of the importance of packing fruit without the slightest injury to the skin, if the fruit is

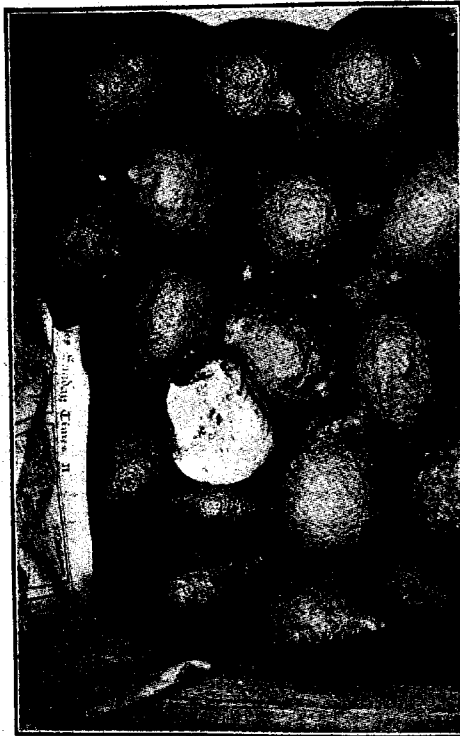


Fig. 1.—Blue Mould, or *Penicillium* rot, in box of lemons. One lemon affected without infecting others.

to be in storage for any length of time. The appearance of oranges rotted by blue mould is familiar to everyone. A soft rot starts from some small wound in the skin, and spreads over the whole orange, which ultimately becomes covered with a white mouldy growth, eventually turning to a greenish-blue color. If the fruits immediately surrounding such a rotten one have no injury to their skin, the mould is unable to attack them, so that a thoroughly rotten orange or lemon

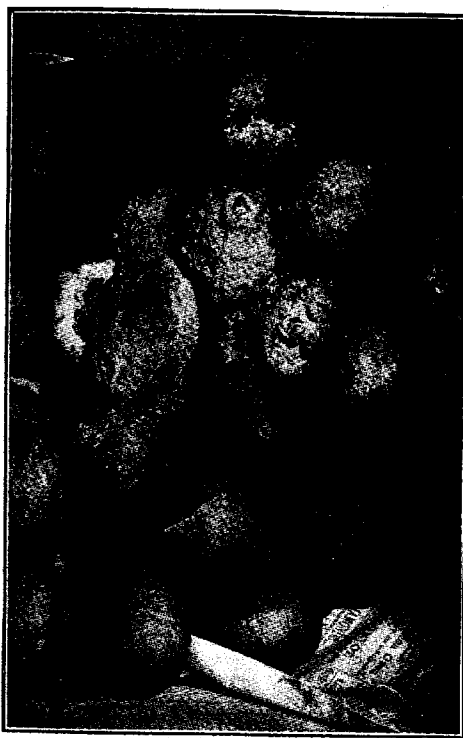


Fig. 2.—Brown Rot in box of lemons. Abundant spread by contact.

may be seen in a case, surrounded by perfectly good ones (Fig. 1). If care be taken in the packing, so that the fruit is in no way bruised, the losses from this rot are practically negligible.

Some twenty years ago, however, another type of rot of citrus fruit was found to be doing considerable damage to the lemon export trade in California.\* This rot, which was called brown rot, first became

\*R. E. Smith, Brown Rot of the Lemon, Cal. Agr. Exp. Sta., Bul. 190 (1907).

apparent in the packing sheds, where it was found to spread from an affected lemon in a case (Fig. 2), until often the entire case was rotten. The methods then employed in the Californian lemon industry were favorable to the rapid spread of the rot. The lemons were picked green, washed in large washers, and cured in curing tents before packing. It was during this curing process that the greatest loss occurred. The rot also occurred in the orchard, however, and affected fruit dropped to the ground. It was usually only the fruit which hung close to the ground which became affected. When the causal fungus and its mode of infection were discovered, good methods of control were devised.

Oranges affected with this rot were found at Langhorne's Creek during August, and later in the same month were sent in from Clare. This is the first record of the occurrence of this disease in South



Fig. 3.—Lemons with Brown Rot from boxes, showing white growth of the *Pythaeotia* fungus.

Australia. It is possible, however, that the fungus may have been present here for some years, as there is little to distinguish it to the naked eye from the early stages of blue mould. Mr. Quinn says that he has seen oranges similarly affected on several previous occasions at Clare. It is very probable that these were cases of true brown rot. Mr. Brittlebank, Plant Pathologist in the Department of Agriculture of Victoria, writes that he first obtained it on oranges imported from Queensland on April 5th, 1918. The disease was proclaimed on April 30th, 1918, but shortly afterwards was found in Victorian orange groves. Mr. Brittlebank himself has seen the disease in many parts of Victoria, including Bright, Swan Hill, Mildura, and several other districts where citrus fruit is grown. A good account of the disease as it occurs in Victoria is to be found in the *Journal of Agriculture*,

Victoria, for June, 1921. From this article it appears that in Victoria leaves and twigs, as well as fruit, are attacked, and that oranges suffer much more than lemons. These symptoms differ considerably from those occurring in America. As yet it is not known how widely distributed it is in South Australia. Its probable importance here in future will be discussed after the life-history and method of infection of the fungus have been described.

#### DESCRIPTION OF BROWN ROT.

Brown rot is known to affect lemons, oranges, citrons, pomelos, and tangerines at any stage in their growth, but lemons seem to be the most susceptible. It is usually only the fruit near the ground which becomes diseased, but in the case of lemons, diseased fruit may occur up to a height of 2ft. or more. The affected fruit is not badly decayed at first, only a very slight softening and light-brownish color indicating the presence of the fungus. It is often not noticed until the fruit falls to the ground. The rot is always accompanied by a peculiar, rather penetrating, and very characteristic odor.

In the packing house and in storage a fine white mould may be formed on the surface (Fig. 3), which is at first rather difficult to distinguish from early stages of blue mould. After a little practice, however, and by the aid of the characteristic odor, the rot may easily be recognised. The way in which the fungus grows from an

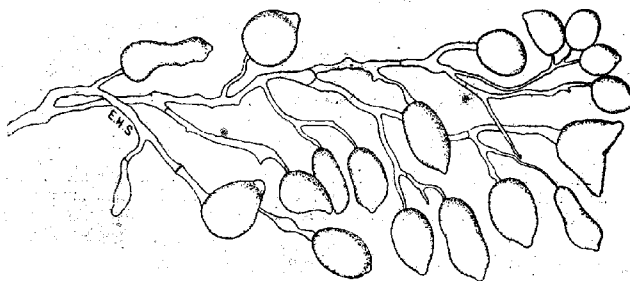


Fig. 4.—Brown Rot fungus, with sporangia, in wet soil. Magnified about 40 diameters.

affected fruit into all others in contact with it at once distinguishes it from blue mould (Fig. 2). In advanced stages of the rot blue mould may develop also, and large numbers of a certain small fly are often found infesting cases of affected fruit, the maggots completing the work of destruction.

#### THE CAUSE OF BROWN ROT.

The fungus (*Pythiacystis citrophthora*, R. E. Smith), concerned in the production of this decay is apparently one which was unknown until attention was directed to the Californian lemon disease, and which, while it is an active parasite of citrus fruits, is doubtless ordinarily a common saprophyte found in moist soils. It is only when



it is growing on moist soil or in water that the fungus produces any reproductive spores or conidia by which it can be spread over some distance. Under these conditions reproductive bodies called *sporangia* (Fig. 4), are formed on the mycelium, which are microscopical, rather egg-shaped sacs, in the interior of which a number of small swimming swarm-spores are produced (Fig. 5). When ripe,

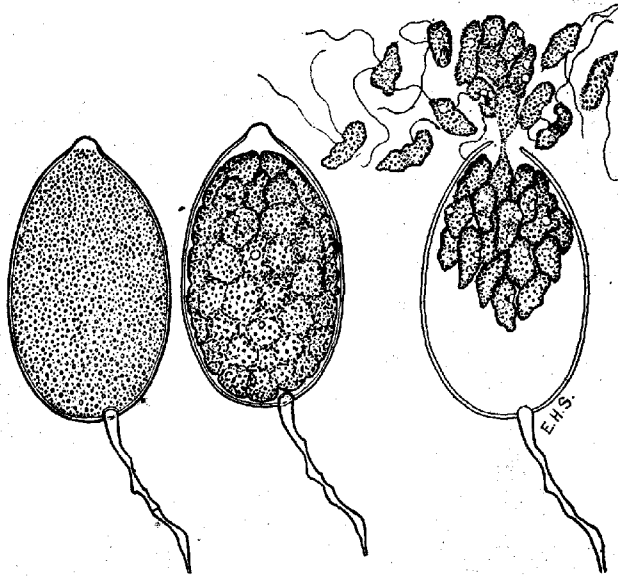


Fig 5.—Showing the development of swarm-spores from sporangia in the Brown Rot fungus. In the sporangium on the right the swimming swarm-spores are escaping. Magnified about 100 diameters.

the *sporangia* burst, and the swarm-spores swim about in the thin covering of water on the surface of the soil. Each swarm-spore settles down after a time, and is able to grow into a new fungus mycelium under suitable conditions.

During rain some of these swarm-spores are liable to be splashed up on to the lowermost fruit of citrus trees, where they develop in the same manner. The mycelium of the fungus penetrates the skin of the fruit, and rapidly grows within, producing the characteristic rot. After a time affected fruit usually drops to the ground. Under favorable conditions for the fungus, orchard infection such as this may result in the loss of as much as a case from every tree.

When growing on the fruit the fungus is always sterile. It forms no spores which can be blown about and infect other fruit, as do many other parasitic fungi. Spread of the infection from a diseased fruit, as happens so much in storage, can only occur by the mycelium

of the fungus growing into fruit lying in contact with the affected one. When an affected fruit drops on to moist ground, however, or is immersed in water, as is done in the washing of Californian lemons, abundant sporangia or conidia are usually formed, capable of infecting any other fruit in the water. Conidia are the same shape as sporangia, but instead of liberating a number of swimming swarmspores, they germinate directly forming fungus mycelium.

#### CONTROL.

A simple experiment in the orchard demonstrated that infection of the fruit occurred from the ground. A layer of canvas was spread under a certain number of trees, and it was found that on these trees no rotten lemons occurred, while on all the neighboring trees were considerable numbers. The method of orchard control adopted in California was to grow a crop of vetch or bur-clover during the winter, in order to get a good thick covering over the soil, especially under the trees. This was later ploughed in, and the ground kept well cultivated during the summer. A certain amount of pruning of the lower branches was also necessary.

As was seen above, affected fruit produced numerous sporangia or conidia when immersed in water, so that the rot was often largely spread in the washer. Fruit then infected subsequently spread the rot to many others by contact in the tent-curing process. It was found that comparatively small amounts of disinfectants, such as formalin, permanganate of potash, or bluestone, in the water of the washer were sufficient to check infection during this process.

These methods, together with careful elimination of diseased fruit during picking, washing, and packing, proved effective in control, and the Californian lemon industry recovered from a danger which was rapidly becoming very serious. From 1901 till 1905 the rot, the cause of which was then unknown, increased in destructiveness from year to year, even in the cleanest packing houses. In 1905 the "Lemon Men's Club" brought the matter to the notice of the State Experiment Station, asking for a scientific investigation of the trouble, and offering to co-operate in any experiments necessary. As a result, in less than two years, the causal fungus, its life-history and mode of infection, and methods for control, were worked out, and losses reduced from thousands of dollars per year from single packing houses to a negligible amount.

#### PROBABLE IMPORTANCE IN SOUTH AUSTRALIA.

From the above account of the life-history of the fungus, it will be seen that it is unlikely to become of much importance in South Australia. Even in the export trade there is nothing corresponding to the washing and curing processes of the Californian lemon industry, during which the rot spread so rapidly before methods of control were devised. It is in the *wetter* orange-growing districts, such as Clare, that the fungus will probably recur to a certain extent every year, becoming more prevalent during unusually cold, wet winters. In the irrigation areas the surface of the ground as a rule never becomes

sufficiently wet to support the fungus. It is only in low places, where irrigation floods the surface, that it is at all likely to make its appearance.

As yet practically nothing is known as to the distribution of brown rot in South Australia. It may be that the rot does not exist on the River Murray in this State; but it would be wise to have cases of rotting which do not resemble ordinary blue mould forwarded to the Department of Agriculture for investigation. As far as is known, the fungus cannot spread over great distances, as do so many other parasitic fungi, by means of their air-borne spores. If the fungus is known to be in a certain place, therefore, precautions can be taken against its further spread by seeing that no fruit lies on the ground or is carried from this part of the orchard to any other. Good cultivation during a hot Australian summer might possibly eradicate it from the ground altogether.

[The illustrations included with this article have been taken from Bulletin No. 19 of the University of California, "Brown Rot of the Lemon," by Ralph E. Smith and others.]

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## FIRST REPORT ON THE TURRETFIELD DEMONSTRATION FARM.

[By ARTHUR J. PERKINS, Director of Agriculture.]

Last year the Minister of Agriculture (Hon. T. Pascoe, M.L.C.) decided that the Turretfield Experimental Farm should in future years be run as a demonstration farm, i.e., a farm on which the endeavor would be made to demonstrate financially the principles on which farming should be carried out in that particular district. Accordingly the change was made on July 1st, 1921, and the present report covers a period of nine months, namely, from that date to March 31st, 1922, the conventional end of the agricultural year. Future reports will bear reference to regular periods of 12 months, apart from interim reports which may from time to time appear necessary.

### DIFFICULTIES OF THE POSITION.

The position before us is by no means easy: success in general farming is so often a matter of successful dealing, and the various operations are so interlocked one with the other that in final analysis it is by no means easy to disengage the part which each individually may have contributed to the success or the failure of the balance-sheet. And yet, if this new venture is to be of value educationally, it is not so much the final balance-sheet figures that are of value, as a correct estimate of the extent to which various farming operations may have contributed to these figures. It will be particularly necessary to disengage purely dealing operations from normal farming ones. Unfortunately, from our present point of view, farming transactions do not readily admit of that clear-cut issue which usually attaches to ordinary commercial transactions. When accounts are closed at the end of the agricultural year there is usually much produce on hand, which must be taken over at a valuation. Valuation is naturally based on values current at the time, and in endeavoring to determine the success or failure of specific farming operations we are naturally guided by the results of such valuations. For example, we may have on hand £500 worth of hay, and on this figure we determine the extent to which hay-growing may have proved successful for the season under consideration. At a later date prices may rise or fall, and influence the balance-sheet of the succeeding year, or even of several future years, according as the hay is held or disposed of more or less rapidly. The final sales, whenever they take place, might put quite a different complexion on

the results of the season in which the hay happened to have been grown. There are other difficulties, too, which will become apparent in the course of these reports.

#### THE FARM.

The Turretfield Demonstration Farm adjoins Rosedale, and is situated 10 miles from Gawler. The land is generally undulating and heavy in character, and lies on both sides of the River Gawler: to a certain extent this complicates working operations, and in places renders fencing somewhat costly.

The total area of the farm is 1,604 acres, which may be distributed as follows:—

	Acres.
1. Arable area . . . . .	1,251
2. Non-arable grazing area . . . . .	334
3. Area occupied by buildings, yards, plantations, &c. . . . .	19
	<hr/>
	1,604

The mean rainfall on the farm over the past 14 years was 18.04in.

#### PRESENT FARM POLICY.

The general farm policy which it is intended for the present to follow can be gathered from extracts of instructions which I supplied to the manager when the change was first brought about:—

“1. For the present I am of the opinion that we can illustrate to best advantage the following general scheme of farming:—

“A farm, the main crop of which is cereal hay or wheat, preceded by bare fallow, and followed by a second crop of barley or oats. A fat-lamb flock and pigs will be the main form of livestock to be associated with these crops.

“2. In order to conform to the above scheme, in each year crops should be laid out roughly on the following lines:—

Arable Area.	Acres.
Bare fallow . . . . .	450
Hay or wheat . . . . .	450
Second crop (barley or oats) . . . . .	200
Grazing crops . . . . .	150
	<hr/>
	1,250

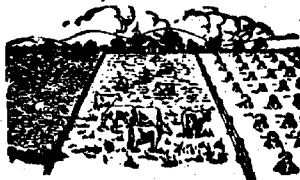
“3. The bare fallow is to be reserved exclusively for the hay or wheat crops. The latter crops to be of such a character as to be adapted to hay or wheat, according to the character of the season and market prospects at harvest time.

“4. The second crops, barley or oats, must be sown on the hay stubbles. In ordinary circumstances the land which is to carry them

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should be broken up with skim plough or heavy cultivator as early after harvest as circumstances permit of. The roller should be used freely to get the soil into suitable seeding condition. Preference should usually be given to barley over oats, in view of the possibility of later sowing, and consequently of getting the land sown in cleaner condition.

"5. Similarly, the grazing crops should be sown on hay or wheat stubbles; according to circumstances they will consist of autumn sown cereal crops, such as oats, or in favorably early seasons of rape. The stubbles set aside for the purpose should, after grazing, be broken up lightly as early after harvest as possible. When favored with end of March rains seeding should proceed immediately, with a view to securing early germination and an abundance of early winter feed. Should autumn rains prove scanty and April comparatively dry, these grazing crops should be sown under dry conditions of soil, in order to bring about germination with the first important fall of rain. In other words, with these crops the aim should be to secure as early germination as the season permits of.

"In certain circumstances it might be advisable to sow comparatively late (say, July or early August) a crop of pease for grazing in summer.

"6. I propose that grain from the second crops shall in the main be fed to livestock, rather than be marketed in kind. It should go mostly to pigs, but a reasonable proportion must be reserved each year for autumn feeding of ewes in lamb, and whenever necessary for winter feeding of both ewes and lambs.

"7. The type of sheep ultimately to be kept on the farm will be settled later on; in the meanwhile, you can utilise those you have on hand (Border Leicesters and Grade Border Leicesters). Eventually we shall have to decide between Merino and Crossbred ewes. For the purposes we have in view, my present inclination is towards the latter, but much must depend on circumstances. One thing, however, I wish to emphasise, and that is that on no account must ewes be kept too long on the farm before being fattened off for market. I want no broken-mouthed ewes on the farm.

"As to number of ewes to be kept, I want them to be adequate to the area available, coupled with a reasonable amount of hand feeding. You will have about 333 acres of permanent pasture and 150 acres of grazing crop, besides the grazing available on unbroken stubbles, on fallowed land, and on land in the process of being fallowed. In the circumstances it should not be impossible ultimately to keep a 400 lambing flock. I recognise, however, that it would, perhaps, be unwise to take up that number until adequate provision has been made for hand feeding.

"8. I am anxious that a special feature shall be made of rearing and fattening pigs for market, hence breeding sows should gradually be increased in number. I admit that until an export market in cured pork has been definitely established we shall at times lose money on pigs. I am anxious, however, to stress their importance to the farmer, and am prepared to accept responsibility for possible losses in this direction.

"9. I desire that all crops sown on bare fallow shall be dressed with 2cwt. of superphosphate, and second crops with 1cwt. Grazing crops, with the exception of pease, need not receive any manure.

"10. Subject to my concurrence, you are at liberty to carry out any legitimate farming transactions calculated to improve the financial aspects of the farm balance-sheet."

#### FINANCIAL POSITION OF THE FARM AT THE OUTSET.

Down to June 30th, 1921, the farm was run as an experimental farm, and on July 1st of the same year it was taken over on a "walk in, walk out" basis as a demonstration farm, to be run on lines already indicated. The land and permanent improvements were valued by the Land Board, whilst stock and plant were valued by an outside valuator and the manager of the farm.

Land and improvements as shown in the balance-sheet were valued as follows:—

	£	s.	d.
Land (arable, £9,777; non-arable, £1,002) . . . .	10,779	0	0
Buildings . . . . .	2,388	10	0
Water service . . . . .	79	10	0
Fencing . . . . .	990	0	0
	<hr/>		
	£14,237	0	0

The land without improvements has therefore been valued at £6 14s. 4d. per acre, and inclusive of improvements at £8 17s. 6d. The non-arable area was valued at £3 an acre. We propose allowing for rent in these statements on the basis of 5 per cent. of the capital value, namely, £711 17s. per annum; and this sum it is hoped will be paid annually into Government revenue.

Live and dead stock and growing crops were valued at £3,353 18s. 2d. Details concerning this heading are shown in the balance-sheet. They may be summarised as follows:—

	£	s.	d.
Tools and plant . . . . .	724	10	0
Farm produce . . . . .	580	10	0
Livestock . . . . .	1,280	3	6
Growing crops . . . . .	611	17	6
Sundries . . . . .	156	17	2
	<hr/>		
Total . . . . .	£3,353	18	2



The sum of £3,353 18s. 2d. represents, therefore, the floating capital of the demonstration farm; on this sum it is proposed to pay annually into the Treasury interest at the rate of 5 per cent., namely, £167 13s. 11d. From time to time, and according as farm revenue permit, it is proposed gradually to repay into the revenue the total value of this floating capital: hence interest charges under this heading will be progressively reduced, and ultimately disappear.

Over and above this, the Government placed to the credit of the demonstration farm a sum of £2,200, which in these statements can be most conveniently treated as a bank overdraft on current account, against which interest is charged monthly, in proportion to the value of the overdraft at the time. According as farm revenues permit, it is proposed in the course of time to reduce, and ultimately to eliminate completely, the value of this overdraft by successive payments into the Treasury. Interest at the rate of 6 per cent. will be charged whenever the overdraft is availed of; and, concurrently, interest will be allowed to the farm whenever the current account is in excess of £2,200. It is proposed to pay annually into revenue the difference between the two.

#### GENERAL RESULTS OF BALANCE-SHEET.

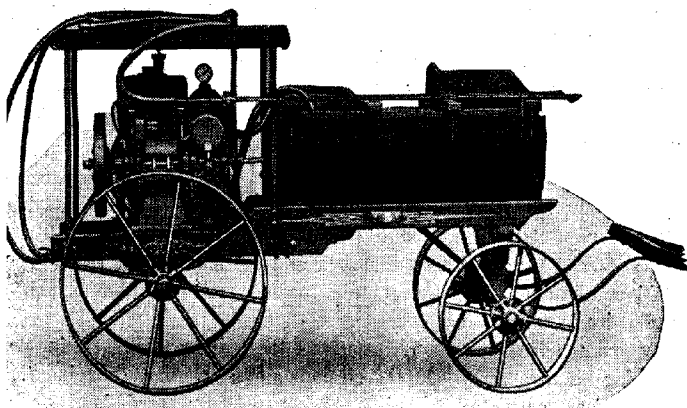
We are now in a position to examine the general results of the first nine months' campaign. As the balance-sheet shows, they have resulted in a gross profit of £1,198 16s. 6d. From this figure we are able to determine the net profit to the Government, viewed in the light of landlord and owner, after deduction of the manager's salary and estimated value of land tax and district rates, which have not been shown in the balance-sheet, since they have not been paid directly by us.

It should be stated here that the manager's salary is not paid from farm revenue, but by Parliamentary grant. He is, however, provided with a house, the upkeep of which will be met by the farm, as well as the cost of food and service for himself and family. The Minister decided that in assessing the manager's value in a commercial concern his salary should be assumed to be at the rate of £300 per annum, with house, net. The upkeep of the manager and his family (food and service) amounted to £84 for the period of nine months. This leaves £141 to be deducted as proportional charge for manager's salary, and this will be debited under "general" to various accounts, and be paid into the Treasury.

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We estimate land tax at £16 16s. 10d., and council rates at £21 7s. 1d. Hence, from the point of view of capital engaged, Government net profit for nine months would be:—

	£	s.	d.
Gross profit . . . . .	1,198	16	6
Less—			
Manager's salary . . . . .	141	0	0
Land tax . . . . .	16	16	10
Council rates . . . . .	21	7	1
	179	3	11
Net profit . . . . .	£1,019	12	7

The capital (fixed and floating) engaged by Government is represented by £17,590 18s. 2d. On this sum, £1,019 12s. 7d. earned in nine months represents interest at the rate of 7.73 per cent. per annum. There is no need to take into account interest on overdraft, since interest on current account more than balances it—£8 8s. 4d. against £8 16s. 6d. In view of the indifferent character of the season, and of the fact that we were facing for the first time the problems of a new line of policy, I am of the opinion that these results are by no means unsatisfactory.

From another point of view it may be stated that after paying Government interest on fixed and floating capital at the rate of 5 per cent.—£659 13s. 2d.—rates and taxes, and the manager at the rate of £300 per annum, the net profit of nine months' operations is represented by £359 19s. 5d.

Let us now look at these returns from the point of view of a farmer running his own farm. In the circumstances we may imagine the manager, as proprietor, engaging £17,590 18s. 2d. towards land, stock, and plant, for which interest must be earned before anything can be left for himself. This implies the deduction from gross profits of the following items:—

	£	s.	d.
Gross profits . . . . .	1,198	16	6
Less—			
5 per cent. on fixed capital (rent) . . . . .	533	17	9
5 per cent. on floating capital . . . . .	125	15	5
Land tax . . . . .	16	16	10
District council rates . . . . .	21	7	1
	697	17	1
Owner's earnings (nine months) . . . . .	£500	19	5

It follows, therefore, that assuming the present manager to be owner, after keeping himself and family in food and service, and allowing 5 per cent. on his fixed and floating capital, he would be left with net earnings of £500 19s. 5d.


Again, there is no need to take into consideration interest on overdraft, since interest on the current account was actually 8s. 2d. in excess of the former.

#### PROFIT AND LOSS ACCOUNT.

The profit and loss account, which is attached herewith, indicates under what heads the profits and losses of the season can be distributed. I propose examining individual accounts in detail. Before doing so, however, it will be necessary to distribute amongst the various accounts the general expenses which have been omitted from the balance-sheet. The items under consideration are as follows:—

	£	s.	d.	£	s.	d.
Interest on fixed capital account (rent)	—	—	—	533	17	9
Interest on floating capital . . . . .	125	15	5			
Manager's salary . . . . .	141	0	0			
Land tax . . . . .	16	16	10			
District council rates . . . . .	21	7	1			
	£304 19 4					
Less difference between interest on current account and interest on overdraft . . . . .				0	8	2
				304 11 2		

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The distribution of these additional expenses is largely a matter of estimate, and therefore open to error, which is unavoidable whenever an attempt is made to determine the cost of individual agricultural operations.

Rent can be distributed only in proportion to area occupied by each crop or type of agricultural activity; the only distinction that can be made is between arable and non-arable land. I propose that the distribution be as follows:—

	£	s.	d.
Hay account . . . . .	229	11	2
Sheep account . . . . .	101	18	6
Wheat account . . . . .	125	3	6
Barley account . . . . .	31	18	2
Oat account . . . . .	21	2	0
Pigs account . . . . .	14	0	7
Cattle account . . . . .	9	8	4
Poultry account . . . . .	0	15	6

Nine months' rent . . . . . £533 17 9

Similarly, general items, including manager's salary and interest on floating capital—£305 1s. 2d.—must be distributed amongst the various accounts. I have apportioned them proportionally to the importance of expenditure incurred under each account, namely:—

	£	s.	d.
Hay account . . . . .	124	2	7
Pigs account . . . . .	45	13	5
Sheep account . . . . .	45	13	4
Wheat account . . . . .	43	5	6
Barley account . . . . .	18	2	4
Cattle account . . . . .	17	16	4
Oat account . . . . .	9	17	8

£304 11 2

#### WHEAT ACCOUNT.

Profit on this account is shown as £188 18s. 10d.; if from this figure, however, we deduct £125 3s. 6d. for rent and £43 5s. 6d. for general expenses, as above, the actual net profit is reduced to £20 9s. 10d.

The area involved was 157.53 acres, which returned 2,079 bush. 40lbs., or 13 bush. 12lbs. an acre. This is not a very good yield, but it should be remembered that on the whole the best and most profitable crops were cut for hay, as representing the better commercial proposition of the two. The net profit per acre, after allowing for every possible form of contingency, including 18 months' rent, manager's expenses, taxes, &c., is represented by 2s. 7d. an acre.

I should have liked to have been able to analyse this account very closely, and this I hope to be able to do in future years. In the

present instance, however, operations having started from July 1st, we took over growing crops at a valuation, and cannot, therefore, analyse questions of expenditure earlier than July 1st, and, therefore, subsequent to seeding. I shall, therefore, merely add a few additional details by way of information.

The crops taken over were valued at £191 13s. 3d., or £1 4s. 4d. per acre. By March 31st, 655bush. 47lbs. had been sold at 4s. 7½d., realising £152 0s. 8d.; 1,421 bush. 20lbs. still on hand were valued at 4s. 8d., representing £331 12s. 11d. General expenses distributed *pro rata* have been rather heavy. By closer attention to recorded details we hope in the future to remedy this difficulty. In the present season they are represented by £58 13s. 4d., or 7s. 5½d. per acre sown, or 6½d. per bushel reaped. Expenditure under this account may be summarised as follows:—

	Total. £ s. d.	Per Acre. £ s. d.	Per Bushel. d.
Valuation of growing crops (157.53 acres) . . . . .	191 13 3	1 4 4	22.118
Wages (harvest) . . . . .	35 10 3	0 4 6	4.098
Use of horses (harvest) . . . .	27 11 10	0 3 6	3.184
Use of implements (harvest) . .	18 17 3	0 2 5	2.177
Bags and twine . . . . .	14 16 0	0 1 11	1.708
Gristing wheat . . . . .	0 5 3	—	—
General . . . . .	58 13 4	0 7 6	6.772
Rent . . . . .	125 3 6	0 15 10	14.450
<b>Totals . . . . .</b>	<b>£472 10 8</b>	<b>£3 0 0</b>	<b>54.507</b>
Less value of agistment on stubbles . . . . .	8 2 2	0 1 0	0.936
<b>Net cost . . . . .</b>	<b>£464 8 6</b>	<b>£2 19 0</b>	<b>53.571</b>

Thus, in so far as this particular season is concerned, after making allowance for every item of expenditure directly or indirectly concerned, including costs of management, rent, very heavy general expenses, the cost of raising the wheat crop was represented by £2 19s. an acre, which on the low average secured, 13bush. 12lbs., works out to about 4s. 5½d. a bushel. At 4s. 8d. a bushel, therefore, it would take over 12bush. to pay for the cost of raising and handling the crop.

It should be stated that on the credit side of the account, £8 2s. 2d. was allowed for agistment on the stubbles, to balance the 18 months' rent charged to the wheat crop.

#### HAY ACCOUNT.

The hay account shows a gross profit of £568 15s. 9d. From this sum we shall have to deduct £229 11s. 2d. (18 months' rent) and £124 2s. 7d. for proportion of general expenses. This will leave us with a net profit of £215 2s.

The area cut for hay (all wheaten) amounted to 280.97 acres, from which 786 tons 2cwts. were taken, or about 2 tons 16cwts. to the acre. The net profit per acre is therefore represented by 15s. 4d., which, of course, contrasts favorably with the net profit for wheat of 2s. 7d. It must be recognised, however, that in the main the best crops were cut for hay, and, moreover, that generally seasonal conditions of the district are apt to favor hay crops more than wheat crops.

By March 31st, 1922, of the hay cut in that season, 441 tons had been sold at 40s., realising £88 10s.; 23 tons had been fed to livestock, and charged up at £47 15s.; whilst 715 tons still on hand were valued at 35s. a ton, representing a total of £1,252 14s. 9d., together with 5 tons of chaff, valued at £15.

Expenditure under this account may be summarised as follows:—

	Total. £ s. d.	Per Acre. £ s. d.	Per Ton. £ s. d.
Value of growing crops taken over (280.97 acres) . . . . .	351 4 3	1 5 0	0 8 11.2
Wages (harvest, &c.) . . . . .	274 13 0	0 19 7	0 6 11.9
Use of horses (harvest, &c.) . . . . .	76 19 0	0 5 6	0 1 11.5
Use of implements (harvest, etc.) . . . . .	30 6 9	0 2 2	0 0 9.3
Salt . . . . .	1 17 6	0 0 2	0 0 0.6
Twine . . . . .	53 19 3	0 3 10	0 1 4.5
Insurance . . . . .	18 15 4	0 1 4	0 0 5.7
General . . . . .	166 8 7	0 11 10	0 4 2.8
Rent . . . . .	229 11 2	0 16 4	0 5 10.08
<b>Totals . . . . .</b>	<b>£1,203 14 10</b>	<b>£4 5 9</b>	<b>£1 10 7.58</b>
Less value of stubble agistment . . . . .	14 17 1	0 1 1	0 0 4.5
<b>Net costs . . . . .</b>	<b>£1,188 17 9</b>	<b>£4 4 8</b>	<b>£1 10 3.08</b>

It is a matter of surprise to me that the net cost of producing and handling a good hay crop should have attained to £4 4s. 8d. an acre, or 30s. 3d. a ton. Relatively to wheat, the harvesting wages are undoubtedly heavy; they admit of being distributed as follows:—

	Total. £ s. d.	Per Acre. s. d.	Per Ton. d.
Binders (wages) . . . . .	21 12 3	1 6	6.6
Stooking (wages) . . . . .	68 13 10	4 11	21.0
Carting to stack, &c. . . . .	181 16 7	12 11	55.5
Various . . . . .	2 10 4	0 2	0.7
<b>Totals . . . . .</b>	<b>£274 13 0</b>	<b>19 6</b>	<b>83.8</b>

#### BARLEY ACCOUNT.

I have shown in the earlier portion of this report that it is intended that barley should occupy an important position in the farm rotation. It is not to be grown on fallow land, but on wheat or hay stubbles, and roughly in the proportion of one-half of the crops grown on fallow. It follows that against this crop one year's rent only will be chargeable. The barley grown will be of the Cape type. The grain itself will not.

as a rule, be sold, but will be marketed through pigs. Hence, the general results of this account must always be considered jointly with the pig account.

The profit and loss account shows a credit balance of £35 5s. 11d.; from this we shall deduct £31 18s. 2d. for rent and £18 2s. 4d. in the way of unallotted general expenses, leaving an apparent net loss of £14 14s. 7d.

The area sown to barley, 75.75 acres, was less than we intend ultimately attaining to. It yielded 1,485bush., or 19bush. 30lbs. to the acre. The manager reports the crop to have been exceptionally rank, and very badly lodged by rough weather towards harvest time, with the result that a large proportion of the grain was lost.

By March 31st, 465bush. of this barley had been fed to livestock, principally pigs, and charged up at the relatively low figure of 1s. 9d. a bushel. We had on hand at the time 778bush., which were also valued at 1s. 9d. a bushel, representing £68 1s. 6d., and 243bush. in the crushed state at 2s. 6d., representing £30 7s. 6d.

It will be noted that the position of this account has been very much affected by valuations. It is probable that had we sold the barley, we could have realised 2s. 3d. a bushel, or thereabouts, which would have added £37 2s. 6d. to our returns, and left a net profit of £22 7s. 11d., representing 5s. 11d. an acre. The profits, however, as we shall see later on, were amply recovered by the pig account.

On the expenditure side, this account may be summarised as follows:—

	Total. £ s. d.	Per Acre. s. d.	Per Bushel. d.
Value of crops taken over (20 acres at 15s.) . . . . .	15 0 0	—	—
Seed (55.75 acres) . . . . .	5 13 8	1 9	1.080
Super (55.75 acres) . . . . .	6 6 0	1 11	1.180
Wages . . . . .	33 13 2	10 6	6.409
Use of horses . . . . .	31 6 5	9 7	5.870
Use of implements . . . . .	10 8 3	3 3	2.006
Bags and twine . . . . .	10 11 1	2 9	1.706
Crushing barley . . . . .	7 2 6	—	—
General . . . . .	24 14 11	6 6	4.000
Rent . . . . .	31 18 2	8 5	5.156
<b>Totals . . . . .</b>	<b>£176 14 2</b>	<b>44 8</b>	<b>27.407</b>
Less stubble agistment . . . . .	21 5 4	5 7	3.437
<b>Net cost . . . . .</b>	<b>£155 8 10</b>	<b>39 1</b>	<b>23.970</b>

From the above it will be seen that after taking every possible item of expenditure into consideration, last season a second crop of barley cost 39s. 1d. an acre to put in and take off, or about 2s. a bushel, on a 19½bush. harvest. General results would have been much more favorable but for exceptionally difficult harvesting conditions. It remains to be stated that the second two columns are partly estimates, owing to the fact that part only of the crop was sown before July 1st.



## PIG ACCOUNT.

The pig account closes with a credit balance of £113 11s. 10d. From this sum must be deducted £14 0s. 7d. for rent and £45 13s. 5d. for unallotted general expenses. This leaves us a net profit of £53 17s. 10d.

The position and value of the herd on July 1st, 1921, and March 31st, 1922, respectively, is shown below:—

July 1st, 1921.			March 31st, 1922.		
	£	s. d.		£	s. d.
5 boars . . . . .	25	13 0	7 boars . . . . .	30	2 0
16 brood sows . . . . .	75	12 0	33 sows . . . . .	152	5 0
6 baconers . . . . .	22	0 0	10 baconers . . . . .	35	0 0
18 slips . . . . .	48	10 0	48 slips . . . . .	96	0 0
7 weaners . . . . .	5	5 0	36 weaners . . . . .	35	10 0
35 suckers . . . . .	13	19 0	19 suckers . . . . .	9	0 0
Total . . . . .	£190	19 0	Total . . . . .	£357	17 0

It will be noted, therefore, that during this period of nine months the value and numbers of the herd have practically doubled. During this period cash returns from the herd attained to £266 16s. 10d., distributed as follows:—

## Sale of Breeding Stock—

6 boars . . . . .	£40	11 6	£	s.	d.
11 sows . . . . .	54	5 0			
			94	16 6	
74 market pigs . . . . .			159	8 3	
Household . . . . .			0	17 1	
Service feed . . . . .			4	5 0	
Show prizes . . . . .			7	10 0	

£266 16 10

Expenses incurred may be summarised as follows:—

Labor . . . . .			£	s.	d.
			82	0 0	
Foodstuffs—	£	s. d.			
849bush. barley . . . . .	89	13 3			
523bush. wheat . . . . .	68	15 1			
7 tons pea haulms . . . . .	5	5 0			
2 tons meat meal . . . . .	39	0 1			
1,992.7galls. skim milk . . . . .	12	9 2			
			215	2 7	
Water . . . . .			1	7 2	
Use of horses . . . . .			1	5 11	
Use of implements . . . . .			1	14 0	
Depreciation on buildings . . . . .			1	6 10	
Show entrance fees . . . . .			1	15 2	
General . . . . .			61	4 9	
Rent . . . . .			14	0 7	

£379 17 0

It will be noted in the above that whilst barley entered very largely into the rations fed to pigs, appreciable quantities of wheat were availed of as well. This was unavoidable, because at the outset the barley taken over was not adequate for our requirements. It is intended ultimately, however, to market the whole of our barley through pigs, and although this does not imply that seconds and inferior wheat, and even good wheat, if necessity arises, will be excluded, it means that barley, together with such complementary foodstuffs as may be necessary, will be the chief foodstuff fed. It will be recollected that barley was passed on to the pig account at the relatively low price of 1s. 9d. We are now in a position to determine what the barley actually realised when marketed through pigs.

Exclusive of the value of the barley, total expenditure in connection with the pigs amounted to £290 3s. 9d. On the credit side, on the other hand, we have:—

	£	s.	d.
Increased value of herd . . . . .	166	18	0
By sales, &c. . . . .	266	16	10
	433	14	10
Less expenditure, exclusive of value of barley . . . . .	290	3	9
Value of 849bush. barley fed to pigs ..	£143	11	1

This corresponds to about 3s. 5d. per bushel of barley fed to pigs, and may be taken to be satisfactory.

#### OAT ACCOUNT.

On the profit and loss account the oat crop shows a credit of £4 5s. 3d. Additional debits are, however, £21 2s. for rent and £9 17s. 8d. for unallotted general expenditure. The net result is that the oat crop shows a loss of £26 14s. 5d.

The area sown to oats was 51.25 acres, which yielded 786bush., or about 15bush. 13lbs., which, on the whole, is hardly a payable crop. Oats, like barley, were grown as a second crop.

Expenditure absorbed by this crop is indicated below:—

	Total. £ s. d.	Per Acre. s. d.	Per Bushel. d.
Value of crops taken over . . . . .	36 0 0	14 0	10.992
Wages (harvest, &c.) . . . . .	9 19 1	3 11	3.039
Use of horses (harvest, &c.) . . . . .	8 2 11	3 2	2.487
Use of implements (harvest, &c.) . . . . .	5 15 9	2 3	1.767
Bags and twine . . . . .	5 11 8	2 2	1.705
General . . . . .	13 9 10	5 3	4.120
Rent . . . . .	21 2 0	8 3	6.443
Totals . . . . .	£100 1 3	39 0	30.553
Less stubble agistment . . . . .	14 7 10	5 7	4.394
Net cost . . . . .	£85 13 5	33 5	26.159

The above analysis of the expenditure reflects the poor character of the crop reaped. Oats cost 33s. 5d. an acre, as against 39s. 1d. for barley grown under similar conditions. On the other hand, it cost 2s. 2d. to grow 40lbs. of oats, as against 2s. for 50lbs. of barley. We have the choice between the two, and unless they show up to better advantage in future seasons, we shall probably limit oat crops to the strict requirements of working horses.

None of the 1921-22 oats had been used on March 31st; they were, therefore, taken over at 1s. 6d. a bushel.

#### SHEEP ACCOUNT.

The profit and loss account shows a credit balance to sheep of £75 14s. 11d. General expenses and rent have, however, yet to be taken into consideration. Against sheep, unallotted general expenses are assessed at £45 13s. 4d. and rent at £101 18s. 6d. This last figure may seem heavy, but we are bound to ask sheep to meet the rent of the land over which they graze. It follows, therefore, that in present circumstances the gross profit has been changed into a net debit balance of £71 16s. 11d.

Expenditure under this account may be summarised as follows:—

	£	s.	d.
Purchase of rams . . . . .	29	18	6
Wages . . . . .	71	9	3
Stubble agistment and grazing crops . .	45	0	6
Hay and oats . . . . .	1	17	6
Water . . . . .	1	13	11
Wool packs . . . . .	3	0	6
Sheep dip . . . . .	4	6	4
Use of horses . . . . .	5	6	9
Use of implements . . . . .	1	1	8
General . . . . .	62	8	1
Rent . . . . .	101	18	6
	£328	1	6

Receipts were as follows:—

	£	s.	d.
Sales—			
20 rams . . . . .	40	17	9
331 lambs . . . . .	234	4	0
Wool . . . . .	79	4	8
Skins . . . . .	2	16	8
	357	3	1
Consumed for rations . . . . .	31	8	6
	388	11	7

# *The Reason why the* **CASE**

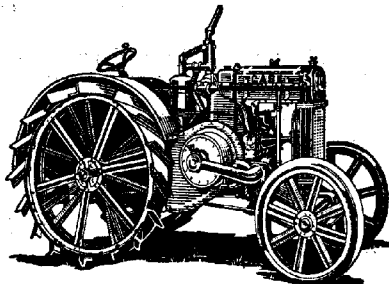
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It will be noted, therefore, that notwithstanding the book debit of £71 16s. 11d., receipts for the nine months actually exceeded expenditure by £60 10s. 1d. It is clear, therefore, that the loss, such as it is, has been made on valuation.

When taken over the flock was valued at £564 14s.; nine months later it was valued at £432 7s., a drop of £132 7s. Nor had the flock fallen off much in numbers, since we opened with 540 head and closed with 528. If, therefore, sheep are to be taken as having shown a loss for the nine months, it is either because of the fall in value of sheep over this period, or more probably because of differences of opinion of two different valuers in the matter of sheep values. It is probable that this loss will be converted into a substantial profit in the coming year. It should be pointed out that the final character of the flock has not yet been determined. For the present it consists of Border Leicesters and their grades. It is possible that we shall eventually find ourselves obliged to replace them with sheep carrying more valuable fleeces.

#### STORES ACCOUNT.

The stores account shows a gross profit of £205 2s. 3d. This, in a sense, is our main trading account, and calls for some explanation. The fact that at the end of each year we must issue reports in which expenditure and receipts are classified and analysed, compels us to close definitely each operation to March 31st of the year under consideration. This will leave us with farm produce, hay, wheat, barley, etc., on hand. The value of this produce may in the course of time rise or fall, according to circumstances, but it can no longer influence the position of the special season to which it corresponds, since this will already have been definitely reported upon. Such losses or profits, therefore, partake more of trading speculations than of agricultural operations. Hence, so far as the ledger is concerned, all such farm produce is transferred to the stores account, from which it is either sold or distributed to livestock, according to requirements, and at current market rates.

In the present instance, profits under this heading represent purely trading profits, and are in no wise connected with agricultural operations of the season. They represent, in the main, profits on produce taken over at valuation in July, 1921.

These transactions may be summarised as follows:—

	Profits.	Loss.
	£ s. d.	£ s. d.
Barley .. . . .	7 18 0	—
Oats .. . . .	0 10 3	—
Wheat .. . . .	—	14 10 9
Straw .. . . .	—	2 0 0
Hay .. . . .	213 4 9	—
Net profit .. . . .	—	205 2 3
	<hr/>	<hr/>
	£221 13 0	£221 13 0

#### POULTRY ACCOUNT.

This account shows a profit of £9 11s. 7d., chiefly on valuation, since the flock has been raised from 46 head valued at £3 10s. 6d., to 100 head valued at £7 10s. Sales and supplies used for household purposes amounted to £5 12s. 1d. From £9 11s. 7d. should be deducted 15s. 6d. for rent, leaving £8 16s. 1d. in the way of net profit.

#### CATTLE ACCOUNT.

This account closes with a gross debit balance of £2 9s. 10d. To this sum must be added £9 8s. 4d. for rent and £17 16s. 4d. for unallotted general expenses. This increases the debit balance to £29 14s. 6d. It should be stated that no attempt has been made to keep dairy cattle on anything like a large scale. They merely represent a small side venture of little importance, connected chiefly with household requirements.

General expenditure in connection with cattle may be summarised as follows:—

	£ s. d.
Wages .. . . .	45 16 6
Foodstuffs .. . . .	52 16 5
Service fee .. . . .	1 15 0
Water .. . . .	0 15 8
Use of implements .. . . .	4 3 3
Use of horses .. . . .	0 5 1
Depreciation .. . . .	0 14 0
General .. . . .	23 19 11
Rent .. . . .	9 8 4
	<hr/>
	£139 14 2

General receipts were represented by £118 9s. 8d.

## ACCOUNTS NOT SHOWING IN PROFIT AND LOSS ACCOUNT.

It remains for me to offer a few comments on various transition accounts, which from their nature do not appear in the profit and loss account.

## WORKING HORSES ACCOUNT.

All expenditure incurred under this account is progressively debited to real accounts concerned. This expenditure may be summarised as follows:—

	£	s.	d.
Valuation of horses, less sales . . . . .	328	9	2
Water . . . . .	2	15	6
Shoeing . . . . .	9	9	9
Foodstuffs . . . . .	214	10	1
Agistment . . . . .	63	8	10
Wages . . . . .	57	8	2
Depreciation on buildings . . . . .	22	17	6
Sundries . . . . .	4	4	6
	<hr/>		
	703	3	6
Less valuation of horses . . . . .	384	0	0
	<hr/>		
Total . . . . .	£319	3	6

During this period of nine months there were 3,139 working days to the credit of horses, which on an expenditure of £319 3s. 6d. represents a net cost per day of 2s. 0.4d., which has been duly debited against accounts concerned.

## DEPRECIATION.

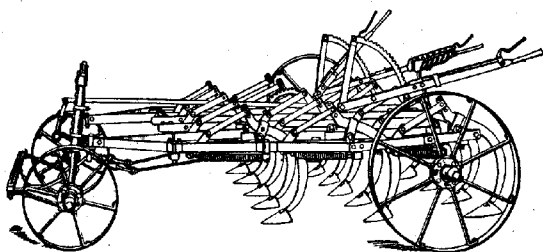
Depreciation has been allowed for in every instance on buildings, tools, plants, &c. It may be summarised as follows:—

	£	s.	d.
Buildings . . . . .	51	0	9
Water service . . . . .	2	16	3
Troughing . . . . .	0	3	5
Fencing . . . . .	36	10	1
Tools and plant . . . . .	178	13	10
	<hr/>		
	£269	4	4

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## FALLOWS.

During the current season 418 acres were treated as bare fallow at the following cost, down to March 31st:—

	£	s.	d.
Wages . . . . .	81	14	7
Use of horses . . . . .	134	8	7
Use of implements . . . . .	36	5	4
	£252	8	6

This represents tillage costs of 12s. 1d. per acre.

## HOUSEKEEPING ACCOUNT.

Living expenses of the manager and his family and of portion of the staff have been met out of farm revenue. Expenditure incurred under this head has been as follows:—

	£	s.	d.
Wages . . . . .	47	14	5
Provisions . . . . .	85	12	2
Farm produce . . . . .	61	8	5
Kerosine . . . . .	4	5	9
Cartage of firewood . . . . .	0	12	6
Repairs . . . . .	4	1	3
Depreciation . . . . .	41	1	1
Water service . . . . .	1	6	2
	£246	1	9

This represents a cost of 2s. 5.43d. per day per individual, or 17s. 2d. a week, or £44 15s. per annum.

## SUMMARY.

In connection with the above report, attention may be drawn to the following points:—

1. The balance-sheet covers a period of nine months, between July 1st, 1921, to March 31st, 1922.
2. The farm is 1,604 acres in area, 1,251 of which are arable.
3. The farm is being run on a three-course rotation: bare fallow—wheat or hay—barley or oats, with sheep and pigs as revenue-earning livestock.
4. The farm has been valued by the Land Board as an agricultural proposition at £5 14s. 4d. an acre, exclusive of improvements, and £8 17s. 6d. inclusive of improvements. The 334 acres of non-arable land have been valued at £3 an acre.

5. Value of dead and live stock, growing crops, and sundries taken over on July 1st, 1921, was £3,353 18s. 2d., in addition to a Government advance of £2,200.

6. The farm pays 5 per cent. of capital value of land and improvements—£711 17s.— as rent, and 5 per cent. on value of dead and live stock—£167 13s. 11d. In addition, 6 per cent. will be paid on the Government advance to the extent that it may be availed of.

7. It is proposed gradually to repay to Government from surplus farm revenues the original value of dead and live stock, &c., and the amount of the Government advance.

8. Exclusive of interest, rent, and rates, and inclusive of only portion of the manager's salary—£84 for keep of self and family—the gross profit for nine months was represented by £1,198 16s. 6d.

9. From the point of view of capital engaged by Government—£17,590 18s. 2d.—the net return after all deductions is represented by £1,019 12s. 7d., or interest at the rate of 7.73 per cent. per annum.

10. From the point of view of the manager, taken as owner, after making due allowance for interest under every head, net earnings of nine months, after keeping himself and family, is represented by £500 19s. 5d.

11. The wheat yield was low—13bush. 12lbs. per acre. It left a net profit of 2s. 7d. an acre, after allowance for every possible form of expenditure.

12. The cost of growing wheat last season was £2 19s. per acre, or 4s. 5½d. a bushel.

13. The hay yield was satisfactory—2 tons 16cwts. per acre—and left a net profit per acre of 15s. 4d., hay on hand being valued at 35s. a ton.

14. The cost of growing hay was £4 4s. 8d. an acre, or 30s. 3d. a ton.

15. The barley crop, grown on stubble land, promised to be heavy; rough harvesting weather reduced it to a 19bush. 30lbs. average. It is being fed mainly to pigs. Estimating the barley at 1s. 9d. a bushel, the account shows an apparent loss of 6s. 6d. an acre.

16. The barley crop cost 39s. 1d. an acre, or 2s. a bushel.

17. Pigs showed a net profit of £53 17s. 10d.

18. Barley fed to pigs showed a value of about 3s. 5d. a bushel.

19. The oat crop, grown as a second crop, was a comparative failure—15bush. 13lbs. an acre. The account shows a net loss on valuation of 10s. 5d. an acre.

20. The oat crop cost 33s. 5d. an acre, or 2s. 2d. a bushel.

21. Difference between receipts and expenditure in the sheep account shows a credit balance of £60 10s. 1d. The account, however, shows a net loss of £71 16s. 11d., which is accounted for on the grounds of relatively low valuation of stock on hand (a difference of £132 7s. with opening valuation).

22. There was a net profit of £205 2s. 3d. on produce taken over, chiefly hay.

23. Poultry shows a net profit of £8 16s. 1d., and cattle a net loss of £29 14s. 6d.

24. The cost of keeping horses was 2s. 0.4d. per diem.

25. A sum of £269 4s. 4d. was allowed as depreciation.

26. Bare fallow cost 12s. 1d. an acre to March 31st.

27. Members of the staff boarded on the farm cost individually 2s. 5.43d. per day, or 17s. 2d. a week, or £44 15s. per annum.

28. The manager (Mr. F. E. Waddy) has carried out his difficult duties with great efficiency, and I feel it a duty to place on record my high appreciation of his work.

#### TURRETFIELD DEMONSTRATION FARM.

##### PROFIT AND LOSS ACCOUNT.

July 1st, 1921, to March 31st, 1922.

Debit.			Credit.		
	£	s. d.		£	s. d.
Livestock—					
Cattle .....	2	9 10	Barley crops .....	35	6 11
			Wheat crops .....	188	18 10
			Oat crops .....	4	5 3
			Hay crops .....	568	15 9
				797	5 9
			Livestock—		
			Sheep .....	75	14 11
			Pigs .....	113	11 10
			Poultry .....	9	11 7
				198	18 4
Profit .....	1,198	16 6	Stores account—		
			Hay, grain, &c. ....	—	205 2 3
	£1,201	6 4			£1,201 6 4



## AGRICULTURAL CONFERENCE AT ORROROO.

Branches of the Agricultural Bureau situated in the Upper Northern district of the State met in Conference at Orroroo on Thursday, August 3rd. The Department of Agriculture was represented by the Chairman of the Advisory Board of Agriculture (Mr. W. S. Kelly), the Director of Agriculture (Professor Arthur J. Perkins), the Government Veterinary Surgeon (Mr. C. A. Loxton, B.V.Sc.), the Government Dairy Expert (Mr. P. H. Suter), the Secretary of the Advisory Board (Mr. H. J. Finnis). There was also a representative gathering of delegates from the Orroroo, Morchard, Willowie, and Eurelia Branches. The Chairman of the Orroroo Branch (Mr. J. F. Robertson) extended a cordial welcome to the visiting officers and delegates.

Mr. W. S. Kelly (Chairman of the Advisory Board), in the course of the opening address, eulogised the work that the Agricultural Bureau was doing for the man on the land, through the medium of District Conferences. Remarkable progress had been made in agriculture during the last few years, he said. Such steps as the introduction of better methods of fallowing, the use of artificial manures, the improvement by selection of cereals, and the rotation of crops had added very considerably to the agricultural prosperity of the State and the Commonwealth, and while they did not anticipate in the course of the next few years any further such epoch-making improvements, he believed that the more general adoption of those principles, and particularly that of fallowing, could further add to the prosperity of agriculture. He suggested the more general adoption in the State of fallow and crop competitions. One feature of the agricultural operations in that district had caused him a good deal of surprise, and that was the fact that they did not pay more attention to the raising of fat lambs for the export trade. In normal years the district had five ideal months for the raising of fat lambs, and if the landholders handled their flocks and fodders on the right lines, then he had not the slightest hesitation in saying that they could turn out fat lambs equal to anything in the State. In conclusion, he expressed the hope that the Conference would prove interesting and beneficial to all present, and that the season would continue as well as it had opened.

Mr. N. S. Lillecrapp (Morchard) then contributed a paper, "CastRATION OF STOCK." The discussion that ensued centred principally around the best methods to adopt, and the application of disinfectants when marking lambs. The consensus of opinion was in favor of the knife. The Government Veterinary Surgeon (Mr. C. Loxton, B.V.Sc.) suggested that if it was thought desirable to use a disinfectant, any of the carbolic dips should be used. The chief point was to treat the lambs when they were quite young; if left too long there was a danger of their bleeding too freely. The morning session was concluded with a paper by Mr. W. B. Bull (Willowie), entitled "Telephone on the Farm." After the luncheon adjournment, the Government Veterinary Surgeon (Mr. C. A. Loxton, B.V.Sc.) delivered an open-air address, "Mammitis and Milk Fever," after which the Director of Agriculture (Professor Arthur J. Perkins) gave a pruning demonstration. In the

evening Professor Perkins addressed the Conference on "Herd Testing Societies," explaining in detail the system in operation at Murray Bridge, and the results that had accrued therefrom. Professor Perkins answered quite a number of questions dealing with this subject, in addition to many queries relating to agriculture generally.

The concluding item of the Conference was "Free Parliament." On the motion of Mr. S. G. McCallum (Willowie), seconded by Mr. F. Bull (Willowie), it was decided to endeavor to secure an extension of time from eight hours to 12 hours for unloading railway trucks containing goods consigned to landholders situated seven or more miles from the railway station. At the instance of Mr. E. King (Eurelia) it was resolved that an effort should be made to have the f.a.q. wheat standard fixed earlier in each year. On the motion of Mr. J. J. Dennis (Orroroo), the Conference decided to ask the Railways Department to return to the old system of issuing return tickets to passengers at all times of the year, and that fares be governed by the same principle as applied to goods, viz., the greater the distance the less the charge per mile. Morchard was decided on as the place of the next Conference, to be held in August, 1923.

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## AGRICULTURAL CONFERENCE AT PINNAROO.

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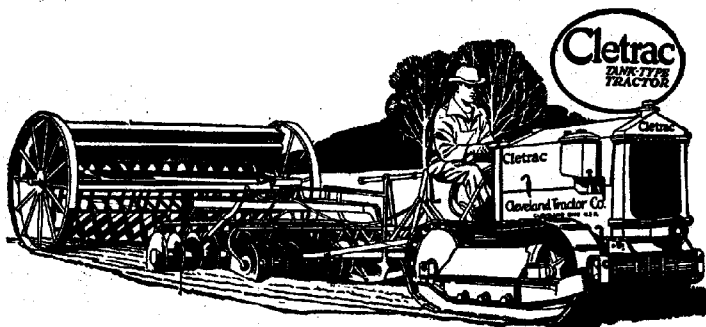
Branches of the Agricultural Bureau situated along the Pinnaroo line of railway met in Conference at Pinnaroo on Tuesday, August 15th. The Department of Agriculture was represented by the Chairman of the Advisory Board (Mr. W. S. Kelly), the Principal of the Roseworthy Agricultural College (Mr. W. J. Colebatch, B.Sc. (Agric.), M.R.C.V.S.), the Chief Inspector of Stock (Mr. T. H. Williams), the Instructor for Mallee Lands (Mr. C. P. Hodge), and the Secretary of the Advisory Board of Agriculture (Mr. H. J. Finnis). There was also a representative gathering of delegates from the Pinnaroo, Lameroo, Parilla Well, Claypan Bore, and Rosy Pine Branches. The Chairman of the Pinnaroo Branch (Mr. P. H. Jones) presided, and extended a cordial welcome to visiting officers and delegates.

Mr. W. S. Kelly (Chairman, Advisory Board of Agriculture) delivered the opening address, in the course of which he said that the object of the Conference was to distribute knowledge, give farmers an opportunity of discussing various aspects of agriculture, and thus to endeavor to lift the standard of the average farming practices higher. There was abundant evidence of the prosperity and enthusiasm of the farmers in that district, and he believed there was a great future before them. He dwelt at length on the advantages of employing men permanently on the farm, a practice which he thought much more desirable than the more general method of depending on casual labor.

Mr. H. Ledger (Pinnaroo) then contributed a paper entitled "Side-lines on the Farm." Mr. T. H. Williams (Chief Inspector of Stock) directed attention to the necessity for providing all young stock and milch cows with a supply of salt, bonemeal, and sulphate of iron, which

should be placed about in convenient positions, where the animals could have free access to it. He suggested a lick made up as follows:—Salt, 100lbs.; sweet bonemeal, 50lbs.; and sulphate of iron, 2lbs., mixed thoroughly. The lick should be placed in strong boxes and sheltered from the rain. Animals would take to the lick more readily if a little chaff and bran were spread over it. Mr. R. McKenzie (Pinnaroo) then read a paper entitled "Threshing." The tone of the discussion suggested that delegates generally were of the opinion that farmers could with advantage thresh portion of their crops, and stack sufficient straw to tide them over periods of feed shortage. In the course of "Free Parliament," on the motion of Mr. R. McKenzie (Pinnaroo) it was decided that, "In the opinion of this Conference, where weighbridges exist, merchants should take the weight of the load of wheat in bulk." Mr. H. G. Fewings, in seconding the motion, said that the practice was general in Victoria, and was a more satisfactory method than weighing individual bags.

At the instance of Mr. E. H. Parsons, it was resolved "That this Conference greatly appreciates and heartily endorses the Government's action in making compulsory the registration of all bulls." The Chairman of the Advisory Board (Mr. W. S. Kelly) then delivered an address entitled "Lamb Raising." During the evening session a paper was read by Mr. H. Kirly (Parilla), entitled "The Best Varieties of Wheat and Oats to Grow in this District." This was followed by an address by Mr. W. J. Colebatch, B.Sc. (Agric.), M.R.C.V.S., Principal Roseworthy Agricultural College, on "Varieties of Oats." It was decided that the next Conference be held at Lameroo in 1923.



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## BRANDING STOCK.

[An address delivered before the Winter School for Farmers at Roseworthy Agricultural College, by T. H. WILLIAMS, Registrar of Brands and Chief Inspector of Stock.]

Briefly, the history of branding stock in this State under authority of the Brands Act dates back to 1878. The first Act passed was soon found to be unworkable, and was repealed in 1879, when a good workable Act, which was mainly the work of the late Mr. C. J. Valentine, the then Chief Inspector of Stock, came in force. That Act worked well, but about 1906 an attempt was made to bring in a Bill for a new Brands Act; but nothing definite came of it till 1913, when the present Act became law. Mr. Laurenti, the Deputy Registrar of Brands, was of great assistance in the drafting of this Act.

One frequently hears the question, "Is the branding of stock necessary and justified?" There can only be one reply, and that is an affirmative one. I can look over the years from 1860 to 1882, when cattle duffing was rife in many parts of the State, and defacing brands on both horses and cattle was common. Then, as now, unbranded stock were never safe. It may surprise you to know that even to-day the duffing of young unbranded cattle and foals is of frequent occurrence. Even within a few miles of the metropolitan area calves disappear, and are not again seen by the owners.

No owner of stock is compelled to brand, but my advice to all owners is that they will be wise to do so, for the reason that lost, stolen, or strayed animals can only be claimed on the registered brands they carry. Where stock stray and are impounded the poundkeeper is required by the Act to notify the owner of the registered brand on such stock. It will be seen what is likely to occur if the stock are not branded. They may be sold out of pound, become the property of a neighboring stockowner, who puts his registered brand on them. The former owner may see what he still believes to be his calves with a neighbor's brand showing, and explanations are asked for.

The manner of obtaining a registered brand is very simple indeed. All the applicant has to do is to write the Registrar of Brands, stating he wishes to register a horse and cattle or sheep brand, as the case may be. Printed forms of application are at once forwarded, and should be returned to the Registrar as soon as possible, with the prescribed fee, in postal note for preference. Postage stamps must not be sent, as they are not a legal tender.

### HORSE AND CATTLE BRANDS.

The prescribed fee for a horse and cattle brand is 5s. where the applicant owns less than 100 animals, if over that number, 10s.

The owner of clean skins, viz., unbranded animals, may place his brands on any of the following positions in order of rotation:—  
*Horses*—First position, near shoulder; second position, off shoulder; third position, near quarter; fourth position, off quarter; fifth position,



off saddle or off ribs; sixth position, near saddle or near ribs. *Cattle* (other than camels)—First position, off rump, hip, or thigh; second position, off ribs; third position, near rump, hip, or thigh; fourth position, near ribs; fifth position, near shoulder; sixth position, off shoulder. *Camels*—First position, near neck; second position, off neck; third position, near thigh; fourth position, off thigh.

When owners, managers, or anyone acting under their direction, are about to brand lines of stock which are already branded, great care must be taken to see that the order or rotation of positions is followed, as it is the last brand in this order which establishes ownership. Many stockowners are under the impression that when they register a horse and cattle brand that the position is fixed for them by the Brands Department, and that no matter how many brands are on animals they buy, they must brand on their imaginary position. This blunder has frequently been committed by owners of wide experience in cattle dealing and branding. The same brand used on horses may also be used on cattle.

No registered brand placed on horse or cattle shall be less than 1½ in. or more than 3 in. in height or size, provided that when a brand consists of a letter within a sign the sign may be 4 in. Every brand shall be placed on one of the positions appropriate to the particular animal described in the third schedule, and in the consecutive order of rotation specified. Any owner placing the first brand on horses or cattle may take any one of the six positions he thinks fit, every subsequent brand to follow the order of rotation referred to above, and animals shall be deemed to have been last branded with the brand which appears to be the brand last placed on them according to the order of rotation.

#### REGISTRATION OF DISTINCTIVE BRANDS AND MARKS.

Provision has been made in the Act for the registration of distinctive brands and marks on horses and cattle by the owner of a registered horse and cattle brand only. These special brands are for denoting class, age, description, &c. For example, a man buying lines of stock with brands in various positions will not need to worry about following the rotations of positions, but may place his distinctive brand, which may consist of a letter, sign, or numerals, on the position fixed by the Registrar on the certificate of registration, according to the sixth schedule of the Act, as follows:—*Horses*—Near neck, off neck, near cheek, off cheek, near ear, off ear. *Cattle*—Near neck, off neck, near cheek, off cheek, near loin, off loin, near horn, off horn, near ear, off ear.

The Brands Act also provides for the registration of distinctive numerals on horses and cattle for stud or herd book purposes. The position of the distinctive numerals, as fixed by the Act, are the near and off neck of horses and the near and off horn or near and off neck of cattle. The positions allotted to applicants are stated on the certificates of registration issued to them.

#### REGISTERED BRANDS FOR EXPORT AND OTHER MARKS.

Any person who desires to use a special brand on horses to be exported from the State may register a brand consisting of one or more letters or signs, or a combination of letters and signs, which shall be not less

than 1 in. in size, accompanied by a dot not more than 1 in. or less than 1 in. in diameter, impressed to the left and on a line with the lower part of such brand. The position of the special brand will be given on the certificate of registration.

#### USING THE FIRE BRAND.

Some degree of skill and care is necessary when branding stock with a fire brand, and anyone who is going to undertake such work for the first time would do well to get a lesson from an experienced brander, or they could practice on a piece of fresh hide. By following the latter course the required heat and the amount of pressure necessary could be determined. Brands should not be burnt too deeply (or through the skin as is frequently done). Burning deep enough to destroy the hair follicles is sufficient. Deep branding leads to unsightly horny growths and depreciation of the value of the hide as leather. It is quite easy to impress a brand in any position without in any way injuring the hide, provided the brander understands his work. On some stations in the interior it is said that native stockmen are entrusted with the branding of young stock, and if one may judge by some of the great burnt blotches seen on cattle, the native must be a cruel and unskilled brander.

The average small stockowner does not need distinctive brands and marks, it being quite sufficient to have his one registered brand on ordinary quiet farm stock. Stud breeders and dealers on a large scale need the distinctive brands, as it saves them the trouble of following the rotation of positions.

Anyone buying unbranded stock should at once brand them with their registered brand for the reason that they may be claimed without dispute should they stray back to a former owner or are impounded. Many disputes have arisen through failure to carry out this precaution. Remember that stock can only be claimed on the registered brand they carry.

#### SHEEP.

##### *Sheep Brands Districts.*

Under the Brands Act the State is divided into four sheep branding districts.

No. 1 consists of the counties of Albert, Alfred, Russell, Buccleuch, Chandos, Cardwell, Buckingham, MacDonnell, Robe, and Grey, and is known as the South-Eastern district.

No. 2 consists of all the territory in the State enclosed by a line commencing at the south-east corner of the county of Manchester, going thence westward along the northern boundaries of the counties of York, Buxton, and Le Hunte as far as the 136th degree of longitude, thence northward to the 30th degree of latitude, thence westward to the western boundary of the State, thence southward to the seacoast, and thence along the seacoast, returning to the point of commencement. This is known as the Port Lincoln district.

No. 3 is the county of Carnarvon (Kangaroo Island).

No. 4 includes the whole of the State not included within any of the divisions above described, also any islands other than Kangaroo Island. This is known as the Central district.

*Registered Sheep Brands.*

Any owner of sheep may obtain a registered paint brand and tattoo mark, such brands and marks to be exclusively used only in the district for which they are registered. Application must be made in the form of the twelfth schedule, and the prescribed fee paid. In the case of an owner having under 1,000 sheep the fee is 5s., and over that number 10s.

Only one brand can be held by any owner unless he is the owner of more than one run, in which case a brand may be held for each run. No registered brand for sheep shall be less than 2in. or more than 4in. in size or height. A dot brand shall be not less than 1in. nor more than 2in. in diameter. A paint brand must be made of oil paint or such other substances as are permitted by regulation. A registered brand for sheep shall only be used in such color, manner, and form, and only placed in such position as determined by the Registrar, and stated on the certificate of registration. Any sheepowner requiring a tattoo mark for sheep can apply to the Registrar, when full particulars will be given.

*Distinctive Brands and Earmarks for Sheep.*

Any owner of a registered sheep brand has the right to use any of the numerals from 2 to 9 in any color paint on any position as a distinctive brand on his sheep, provided that only one of such numerals must be placed on a sheep. Numerals must not exceed 4in. in size or height. The owner of a registered sheep brand may mark his sheep with any earmark he chooses, and may also attach tags to the backs of the ears of sheep. All sheep earmarks must be made with pliers, and must not exceed  $\frac{1}{2}$ in. by  $\frac{1}{2}$ in. in size. The ears must not be cut or cropped off by a straight cut.

A question frequently asked is, "If my position for branding is taken where can I put my brand?" Seeing that the positions of all brands on sheep are fixed, it is obvious that if a position is already taken there is no position left for a second brand. It must also be realised that by placing a second brand on any of the four branding positions, viz., the top of the shoulders, near and off ribs, and rump, the combination of the letters of the two brands may make the registered brand of some other sheepowner. Any person doing such a thing would be committing a breach of the Brands Act, and creating a position that might end in serious consequence. If an owner's position is taken, his best and only course is to use any of the numerals from 2 to 9. In the colors black, red, blue, and green there is a choice of 32 figures. It is a wise course for anyone buying sheep to have their brands clearly stated in the sale note.

*POUND BRANDS.*

A pound brand is registered in the name of every public pound in the State. Every poundkeeper must be in possession of copies of the latest Brands Directories, and when stock are impounded it is his duty to examine them carefully, and should a registered brand be discovered the owner must be notified. If stock are sold out of pound they must

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be branded with the pound brand, the rotation of positions being followed if there were any previous brand on them.

In the case of sheep sold from pounds the brands must be green paint on the head. If the poundkeeper neglects to give notice to owners, as required by the Act, or neglects to brand horses, cattle, or sheep sold out of pound, or refuses to give any necessary information within his knowledge when requested by an inspector, he shall be guilty of an offence against the Act, and is liable to a penalty of £25.

#### TRANSFER IN CASE OF DEATH OF OWNER.

Upon the death of the owner of a registered brand or mark the representative of the deceased must apply to the Registrar to have the brand transferred to such person or persons as may be nominated.

#### TRANSFERS AND CANCELLATIONS.

The owner of a registered brand or mark may transfer his right to another person on signing a memorandum of transfer, which must also be signed by the person to whom the ownership of the brands is transferred.

#### CANCELLATIONS.

Any person may, on application to the Registrar and payment of the prescribed fee, have any brand or mark registered in his name cancelled. The Registrar has power under the Brands Act to cancel any brands or marks not in use, provided two months' notice is given to the last known place of residence of the owners.

The Registrar may also, after three months' previous notice published in the *Government Gazette*, and posted to the last known place of residence of the owner of any brand or mark, cancel the registration of same for the purpose of preventing abuse or to prevent infringements of the Brands Act. Another brand or mark may be allotted in place of such cancelled brand or mark in the discretion of the Registrar. Brands or marks may be cancelled on the transfer or conveyance or lease of any run. Cancelled brands and marks may, in the discretion of the Registrar, be again registered.

#### BRANDS REGISTER AND DIRECTORY.

Statements of all brands and marks registered are published quarterly in the *Government Gazette*, and must be in the possession of every inspector of stock, police officer, and poundkeeper. The Horse and Cattle Brands Directory and Sheep Brands Directory are published by the Government Printer every alternate year, and contain a full record of all brands and marks registered, transferred, and cancelled. Any Brands Directory or quarterly statement, or a copy of any such directory or statement purporting or appearing to have been printed by the Government Printer shall, in any action, suit, prosecution, or trial, be received without proof as *prima facie* evidence of the matters, statements, and things contained therein.

#### MISCELLANEOUS.

Any justice, inspector of stock, or any member of the police force, may at any time, either alone or with such persons as he deems necessary, enter upon any run or other premises or any public or private place, and inspect any stock, or any hide or skin, or any brand or branding iron, or instrument for branding, and they may seize and

take away any stock with respect to which it appears an offence has been committed, or any hide or skin, or any branding iron or other instrument which appears to have been used, or to be capable of being used for committing any offence against the Brands Act, whether such stock, hide, skin, brand, iron, or instrument is in the possession or under care or control of any person or not.

#### EARMARKS.

No earmark shall be made on cattle or sheep except with pliers, and a distinctive mark shall be made only as indicated by the Registrar on the certificate of registration, and only one-third of the ear shall be affected by the making of any earmark.

No sheep earmark shall exceed  $\frac{3}{4}$  in. in length or  $\frac{1}{2}$  in. in width or diameter, unless such mark is a slit, which may be  $1\frac{1}{2}$  in. in length from the tip of the ear. In no case shall earmarks be made by means of a crop, which means cutting off any part of the ear by a straight cut.

Any cattle or sheep having their ears marked contrary to the provisions of the Brands Act may be seized by an inspector, and may be forfeited, sold, or disposed of as directed by the Minister.

#### INDISTINCT SHEEP BRANDS.

When a sheepowner finds that his registered brand has become indistinct on his sheep he may apply to the Registrar for permission to rebrand such sheep in the same position.

#### OFFENCES UNDER BRANDS ACT.

It is illegal to brand or mark horses, cattle, sheep, camels, asses, or mules with any brand or mark which at the time is not registered in the name of the person who so brands or marks, or direct it to be done, or to destroy, alter, deface, or render illegible any brand or mark, or suffer or assist in rendering illegible any brands or marks of whatever description upon any of the animals named above, or on any hide or skin, or sell or otherwise dispose of, possess, or offer for sale or disposition any hide or skin on which any brand or mark has been altered, defaced, or rendered illegible either before or after death, or mark, or assist in marking, or cause, authorise, or suffer to be

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marked any cattle or sheep on the ear in a manner contrary to the provisions of the Brands Act; or to possess any cattle or sheep with ears marked contrary to the provisions of the Act; or mark or cut the ears of cattle whereon a distinctive mark has already been made. Any such offence against the Brands Act renders one liable to a penalty of not less than two pounds and not more than one hundred pounds, and imprisonment, with or without hard labor, for any term not exceeding six months.

#### FURTHER OFFENCES.

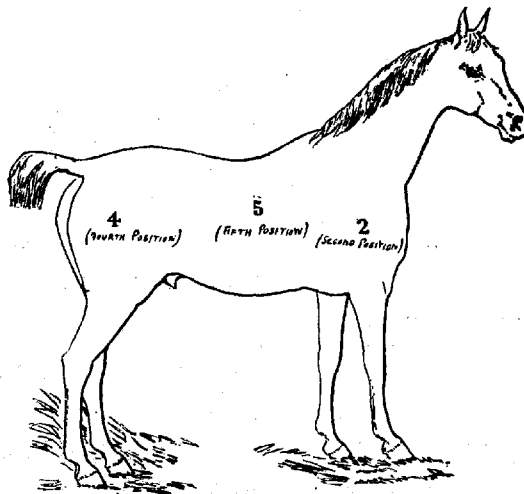
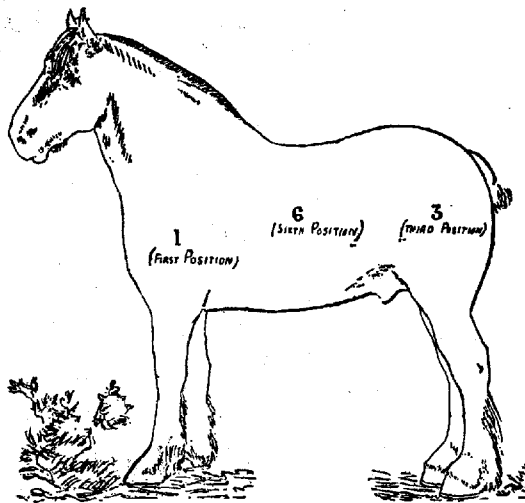
Any person who places or uses on any horses, cattle, or sheep, or on any hide or skin, any brand or mark of any kind in any manner, form, or position otherwise than as registered under the provisions of the Act, or contrary to any provision of the Act, or marks any sheep with any of the numerals from 2 to 9, mentioned in section 31 of the Act, or with any earmark or tag; unless he is the owner of a registered brand for sheep; or brands or marks, or assists in branding or marking any horses, cattle, or sheep, or suffers the same to be branded or marked with a brand which is not registered in the name of the owner of such horses, cattle, or sheep; introduces into the State from any other State of the Commonwealth of Australia, any cattle or sheep with their ears cropped off, or marked contrary to the provisions of the Brands Act; or brands or marks any sheep upon the rump with the letter S in any paint or substance of a red color, except as required by the Scab Act of 1859, unless authorised in writing by an inspector of stock, or hinders, molests, obstructs any inspector or other officer in the execution of any of his powers or duties, or refuses to suffer any inspector or other officer to do anything which by the Brands Act he is authorised to do; or commits or attempts to commit any breach or violation of any provisions of the Act, or does any Act, matter, or thing directed by the Act not to be done, or omits to do any act, matter, or thing which is directed by the Act to be done, or in any manner whatsoever contravenes, whether by commission or omission, any provision of the Act, shall be guilty of an offence against the Brands Act, and are liable to a penalty of not more than twenty-five pounds or three months' imprisonment.

#### WILFULLY BRANDING.

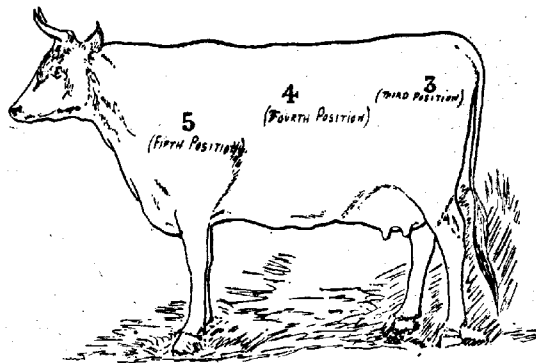
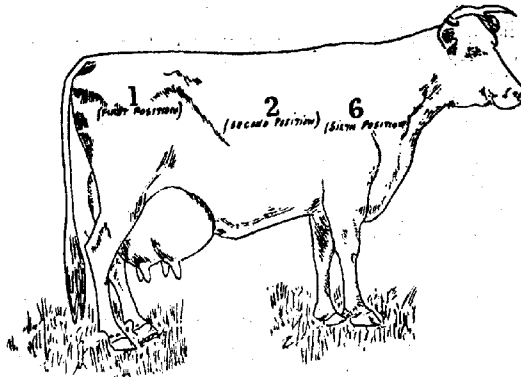
Any person who wilfully brands or marks, or assists in branding or marking, with his brand or mark, or wilfully authorises, causes, or suffers to be branded or marked with his brand or mark any horses, cattle, or sheep, or any hide or skin of the same, knowing at the time of such branding or marking that such animals and hides were not his property, or knowingly and wilfully, with intent to defraud, uses the brand or mark of any person without his authority, shall be guilty of a felony, and shall be liable to be imprisoned, with or without hard labor, for any term not exceeding three years. Magistrates or justices may make an order as to costs. Proceedings for offences against the Brands Act may be instituted at any time within 12 months after the commission of such offence.

In conclusion, it should be understood that any stockowners in doubt can always obtain any information they require about branding stock from the Stock and Brands Department, Adelaide.

The following diagrams show the order of positions for branding horses, cattle, and sheep:—





**GRAIN GROWERS!**

Please Note—

WHEN MARKETING YOUR

**WHEAT, OATS, BARLEY, PEAS, CHAFF, &c.,**

IT WILL PAY YOU TO GET IN TOUCH WITH

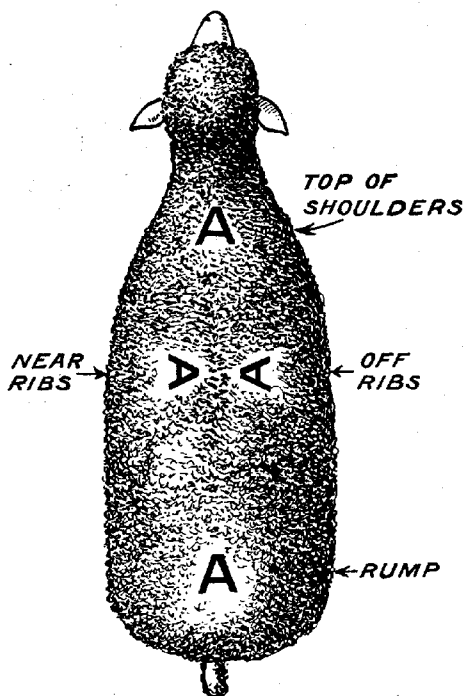
**CHARLES WHITING,****GRAIN AND PRODUCE MERCHANT,****CENTRAL MISSION BUILDINGS, ADELAIDE.**

Order of branding sheep—

First position, top of shoulders.  
Second position, near ribs.

Third position, off ribs.  
Fourth position, rump.

On every sheep brands certificate issued by the Registrar the position of the brand is shown, and if a person who brands sheep fails to follow that he commits a breach of the Act.



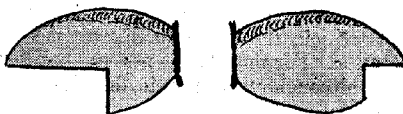
ILLEGAL EARMARKS OF CATTLE AND SHEEP.



1. A cropped ear, or "Cattle Duffer's Earmark."



2. Slit too deeply. Correct mark.



3. Too much ear cut away. Correct mark.

## ORCHARD NOTES FOR SOUTHERN DISTRICTS.

[By C. H. BEAUMONT, Orchard Instructor.]

Get the ploughing done as early as possible. Do not allow the soil to become heaped up around the trees.

See that cuttings are all removed or burned; they become a nuisance if left about. Hoe close to trees if necessary; with good implements very little hoeing remains. In the older orchards and vineyards manuring is a necessity, and this month is a good time to attend to it. Drill in 2cwt. to 3cwt. per acre of orchard manure or of bonedust; or spread about the trees 3lbs. to 4lbs. for small trees to 8lbs. or 9lbs. for larger trees. To clear sorrel from the soil 10cwt. to 11cwt. per acre of lime are required.

Plant citrus trees. They are planted in a manner similar to that described for other fruit trees. Make sure that no disease exists on them before you plant them. Water them soon after planting if the weather gets dry, and keep the soil loose. To prevent fungous pests it is necessary to spray thoroughly about the time the buds are ready to burst, or just when opening. The best solution known for this work and at this time is the Bordeaux Mixture. Use it well; get to the tips as well as about the main limbs. In a big orchard or vineyard a mixing station pays handsomely. Red spider may be lessened by the use of red oil; if the tree is bad, see that you coat fruit spurs and crutches of limbs; you can see the eggs plainly if in any quantity. If not enough to spray, use a paint brush. Watch your strawberry plants for mildew. Keep woolly aphis and peach aphis in check. Grafting of fruit trees and vines is done this month; if you are in doubt about how to do it, ask the Instructor for your district and he will demonstrate. Tomatoes are planted this month in many parts; use only strong plants of a well-known wilt-resisting variety.

Fruit in cool stores should be examined often, and culls separated.

Cut worms may be about young plants; spray with arsenate of lead, or use mixture of poisoned bran. This bran will stop caterpillars.

Get material ready for spraying to control codlin moth.

## ORCHARD NOTES FOR THE NORTHERN DISTRICT.

[By J. B. HARRIS, Orchard Instructor and Inspector.]

A pest which has not, to my knowledge, been previously reported as attacking fruit trees in the Northern district has recently been discovered at Angaston. Fortunately the pest has until now been observed only in one tree, although other trees in the vicinity have been closely

examined. The attacked tree, an apricot, which on account of unsatisfactory progress had been worked over two years ago to a variety of prune, was killed apparently by the beetles. The bulk of the tree has been burned, only a small portion being preserved, and the beetles have been killed.

The pest is a species of auger or borer beetle, known as *Bostrychopsis jesuita* (Fabr.). It is an indigenous insect, living ordinarily on native timber, but like certain others is by no means averse to imported fruit trees as host plants. French, in his "Destructive Insects of Victoria," figures this pest under the common name "orange and fig tree borer," and shows an attacked limb of an apple tree. It is also reported as attacking lemons, so there is justification for crediting it with attacking a variety of fruit trees. The insect is reported to be common in Queensland and New South Wales, and has also been reported as doing damage at Mildura and Doncaster in Victoria.

At the time of writing only the mature beetles have come under notice. The eggs are recorded as being laid on the trunk of the tree; the larvae hatch there, and eat their way into the trunk, and then in process of feeding they tunnel the trunk and branches longitudinally, thus causing the death of the tree. The pest has been said to prefer to attack a tree which is in a weak state, but has been known to attack vigorous and healthy trees.

The mature beetles are black in color, and with wings closed are roughly cylindrical in form, varying in length from  $\frac{1}{2}$  in. to  $\frac{3}{4}$  in. What at first glance appears to be the most forward segment, and might be mistaken by a casual observer for the head, is really the prothorax, the upper portion, or pronotum, of which is projected forward and then downward in such a way as to form a cowl or hood, which protects the head. The forward edge of this hood is continued in two downward projections, which may serve to protect the eyes during burrowing; it is from this hood that the insect has derived its specific name *jesuita*.

The buds of a prune variety which had been inserted in the apricot tree had made very vigorous growth in the two seasons before the tree died, but when examined the limbs were found to be extensively tunneled, and that, no doubt, caused the death of the tree. The insect, judging by its wing development, is capable of considerable flight, and it is significant that no timber grows in the immediate vicinity of the orchard tree attacked. Probably the originators of this attack had strayed, or been carried away from their natural habitat.

In selecting scrub timber for use in the orchard great care should be exercised to insure that it carries no pest which may possibly injure fruit trees. It would be a wise precaution where possible to destroy all native timber which is growing in the vicinity of orchards and which is infested by possible orchard pests.

## ADVISORY BOARD OF AGRICULTURE.

The monthly meeting of the Advisory Board of Agriculture was held on Wednesday, August 9th, there being present:—Mr. W. S. Kelly (Chairman), the Principal of the Roseworthy Agricultural College (Mr. W. J. Colebatch), Capt. S. A. White, Messrs. F. Coleman, T. H. Williams, A. M. Dawkins, C. J. Tuckwell, and the Secretary (Mr. H. J. Finnis). Apologies were received from Professor Arthur J. Perkins and Col. Rowell.

*Proposed Suspension of Stock Diseases Act in Mid-Northern Areas.*—The Chief Inspector of Stock (Mr. T. H. Williams), who was asked to make a statement on this matter, stated:—"In my opinion the flocks generally in the Mid-North are free of lice. There may be isolated cases, but this does not appear to me to justify compulsion for every sheep owner, as isolated cases can be dealt with under the Stock Diseases Act and dipping regulations, which provide that:—1. Lice-infested sheep cannot be exposed in any market, whether public or private. 2. Must not be moved off any lands or pastures without the written permission of an inspector of stock. 3. Must not be travelled on any road, depastured on any common or Crown lands. 4. If infested with lice or ticks at time of shearing, must be dipped before moving off the owner's station or any other holding or farm. The penalty for a breach of any of the foregoing provisions is from £5 to £100. In my opinion the above provisions are quite drastic enough for that portion of the Mid-North, north of Clare. There appears to have been an impression abroad that because the compulsory provision to dip clean as well as infested sheep was being withdrawn from a certain area in the North, that all power in dealing with infested sheep had ceased, but it should be clear that such is not the case. It does not appear that when the amending Stock Diseases Act of 1915 was passed that it was the intention that large numbers of owners of clean flocks should be forced to dip, because a few isolated cases, that can be dealt with at once, may exist. The northern boundary of the compulsory dipping area now proposed is from a point just north of Wallaroo due east to a point just north of Morgan. As complete compulsory dipping of all sheep is permanently in force in the whole of the South-East and the southern districts, where sheep lice were so bad a few years ago, there is never again likely to be a general spread of the scourge." The Secretary was instructed to forward a copy of the report to the Gladstone Branch.

*Tooart Gums on Eyre Peninsula.*—The following resolution was received from the Petina Branch:—"That the Advisory Board endeavor to have the Tooart gum grown at Wanilla Forest, Port Lincoln." The matter was submitted to the Conservator of Forests (Mr. W. Gill), who supplied the following report:—"The Tooart gum (*Eucalyptus gomphocephala*) was first planted to the number of 1,050 trees at the Wanilla Forest in 1894, 28 years ago, on the gravelly ironstone land which constitutes the bulk of the land on that reserve; a few of them are still living, dragging out an enfeebled existence, plainly showing

the unsuitability of that kind of land for them. Ten years later, nearly 20 years ago, in 1903-4, they were tried again to the number of 2,148, in another locality on the reserve, where they grew rather better, the soil being of a limestone character; but, unfortunately, just at the age of 20 years, when they ought to be making good timber growth, they are dying off in numbers, in the same way as they have done in other parts of the State. They were tried again, for the third time, in 1912, when 1,613 were planted, also in 1920, when 3,130 were planted. Good specimens are to be seen, but it is clear that they cannot be relied on for the production of timber of any commercial value. The 'habitat' of this tree in Western Australia consists of a strip about 60 miles in length along the coast of the Indian Ocean, from Bunbury to Perth and beyond; it is three or four miles wide, and of limestone formation, but differs widely from all our limestone country, owing to possessing a rainfall of 30in. to 40in., and the favorable influence of the moist sea atmosphere, congenial conditions which are absent in South Australia. It is not anticipated, therefore, that any more will be planted, seeing that the results attained by 7,941 already planted show that further expenditure in this direction is not justified."

*'Lucerne Flea.*—The Secretary (Mr. H. J. Finnis) stated that the Government Entomologist (Mr. A. M. Lea) was at present engaged in conducting investigations with respect to the lucerne flea, and that the matter would in due course be placed before the Board.

*Resolutions from Upper Northern Conference.*—The following resolutions were carried at the Conference held at Orroroo on August 3rd.—Return Rail Tickets—"That the Railways Department be asked to return to the old system of issuing return tickets to passengers at all times of the year, and that rates be charged the same as goods—the further the distance the less per mile charged." On the motion of Mr. Colebatch, seconded by Mr. Dawkins, and supported by Mr. Williams, the Board decided that the matter was one which should be brought before the Railways Commissioner by the Parliamentary representatives for the district. F.a.q. Standard—The Conference also resolved:—"That the authorities be requested to fix the f.a.q. standard at an earlier date than is now the custom." This matter was fully dealt with at a recent meeting of the Board, and it was decided that the Branch should be advised in terms of the letter from the Secretary of the Chamber of Manufacturers (see *May Journal of Agriculture*, 1922). Demurrage at Railway Stations and Sidings—The Conference also resolved:—"That this Conference requests the Advisory Board to approach the Government to allow outside districts, say, seven miles and over from the railway station, the time of 12 hours before demurrage should be charged against goods, and especially on super." On the motion of Mr. A. M. Dawkins, seconded by Capt. White, it was decided that the Chairman and the Secretary of the Board should wait on the Railways Commissioner and place the matter before him.

*Railway Freights on Bureau Exhibits.*—The following resolution was received from the Naracoorte Branch:—"That the Advisory Board of Agriculture be asked to take steps to have Bureau Con-

ference exhibits railed at the reduced rates charged for show exhibits." It was decided that the Chairman and Secretary of the Advisory Board should interview the Railways Commissioner on this matter.

*Change of Name of Branch.*—The Board agreed to the request from the Mintaro Branch that the name thereof should be changed to Wirrilla.

*Interpretation and Alteration of Rule Regarding Membership of the Bureau.*—Communications were received from the Elbow Hill and Collie Branches referring to the correct interpretation of and suggesting alterations to the rule which governs membership of Branches of the Bureau. The Secretary was instructed to communicate with the Branches.

*Railways Standing Committee on Eyre Peninsula.*—Correspondence was received from the Collie Branch, in which it was suggested that the Superintendent of Experimental Works (Mr. W. J. Spafford) should accompany the Railways Standing Committee on their projected tour of inspection of the proposed railway line from Chandada to Stokes' Corner. On the motion of Mr. Coleman, seconded by Capt. White, the Board instructed the Secretary to forward the resolution to the Minister of Agriculture, with a request that it should be brought under the notice of the Chairman of the Railways Standing Committee.

*Congress for Women's Branches of the Bureau.*—It was decided, on the motion of Mr. Colebatch, seconded by Capt. White, that the Secretary should communicate with the honorary secretaries of the Women's Branches and suggest to them the advisability of holding a separate Congress for the Women's Branches.

*Leave of Absence.*—Mr. C. J. Tuckwell, who intends making a trip to England, was granted six months' leave of absence. Members also wished Mr. Tuckwell a pleasant voyage and a safe return.

*Date of Next Meeting.*—It was decided that the next meeting of the Board should be held on Monday, September 11th.

*Life Member.*—The name of Mr. James Nairn was added to the roll of life members of the Agricultural Bureau.

*New Members.*—The following names were added to the rolls of existing Branches:—Renmark—N. F. Taylor; Cherry Gardens—J. N. Lewis; Yallunda Flat—J. L. Hutchins; Rapid Bay—John Watkins; Salisbury—C. Rice; Brentwood—C. A. Watson, L. G. Boundy, Roy Biddle; Whyte-Yarcowie—R. Philbey, —Warne; Big Swamp—G. H. Bassham; Weavers—A. Cornish, H. Dodd, M. Dodd; Taplan—V. H. Granes; Orroroo—F. Goodenough; Mount Bryan—C. Tiver, G. Goodridge, A. Smidt; Claypan Bore—J. Barry; M. Dawson; Arthurlton—D. J. Walding; Balhannah—H. Middleton; Glossop—C. C. Shobrell, G. S. Stewart, F. Scallery, A. Allechurch, G. Bottom, S. J. Horsefall, L. Craig; Mount Gambier—F. Clark; Williamstown (Ladies')—Mesdames S. Marriot, G. Clark, E. Worden, G. Thyer, Miss R. Bain; Pinnaroo—H. Vaughan, F. E. Pierson, H. Fergerson, H. Telfer, M. Robinson; Paskeville—R. A. Train, E. W. Hughes; Barmera—H.

Anthony, A. E. Buxton, D. H. Brooke, W. Ellenby, L. Herriman, S. Martin, W. Mair, S. Palmer, W. G. Rogers, F. Tinkin, R. Simes, C. Wyman, R. A. Wamsley; Meadows—G. Nicol; Laura—S. R. Baynton, W. Hale, H. Pech; Lenswood and F.R.—A. Jordan; Tatiara—A. T. Mitchell, W. J. Thomson, D. A. Hay; Monarto South—H. Schenscher; Owen—A. H. Young, J. D. Harkness, A. White; Strathalbyn—K. Tucker, L. Gray, W. Fox; Wynarka—G. W. Campbell, C. Waterhouse; Butler—N. L. Pedler; Gawler River—A. L. Preiss, R. Lange; Carrow—F. L. Bawden, A. J. Byrne, Alfred Byrne, P. Byrne, A. S. Beare, F. T. Burt, C. G. Puckridge; Stockport—C. Clayton, — Pope; Pata—H. Leaker, H. R. Thiele, W. F. Westbrook; Parilla Well—S. T. Burford, C. Burford, W. Cameron, A. E. Davis, H. Petts; Waikerie—A. Fricker, S. Rainey, C. M. Thomas, J. Allen, G. S. Penfield, F. B. Harden, H. H. Howel, V. Dunston; Taplan—G. Follett, J. Wedding; Mount Gambier—R. McCormick, G. Collins, C. C. Collins, C. Cameron; Lameroo—J. Lane, E. J. Bergin, E. Henschke; Smoky Bay—R. Dale; Roberts and Verran—C. Masters; McLachlan—H. Flavel; Port Elliot—A. Wiadrowski; Beetaloo Valley—B. L. McIntosh; Arthurton—J. J. Hinchkie, B. G. Walding; Frances—A. C. Koch; Watervale—A. J. Grace, B. Mannix; Port Germein—W. Mudge, R. M. Gluyas, D. J. Gluyas; Windsor—A. D. Prime, W. J. Webb; Williamstown—A. Bain, jun., C. R. Bain, E. H. Springbett; Lyndoch—Rev. J. H. Waters, K. Martin; Balhannah—C. Ellborough, R. James, G. Harris, H. Norsworthy, R. Hughes, L. Spechr, R. Hughes, jun., H. H. Peacock, A. Weidenhofer; Kybybolite—D. H. Irving; Owen—D. F. Freebairn, W. Crambrook, S. Jas. Freebairn; Pata—J. G. Ansell, E. J. A. Westover; Sandalwood—W. McKenzie, W. G. Goodhard.

### SEEDING QUERIES.

A number of questions recently submitted by the Narridy Branch of the Agricultural Bureau have been replied to by the Superintendent of Experimental Work (Mr. W. J. Spafford). The questions and Mr. Spafford's replies thereto are set out below:—

1. *How do you tell inferior bluestone, if there is any?*

For the prevention of "bunt" in wheat, the only chance of obtaining inferior bluestone (sulphate of copper) is in buying an adulterated sample, and unfortunately there is no simple way by which farmers can tell if this material is adulterated, but they can make sure that it is not tampered with by purchasing only bluestone composed of large crystals of a deep blue color. Sulphate of iron is cheaper than sulphate of copper, and the crystals are of a greenish-blue color, but they are invariably small in size, so if samples of bluestone containing a comparatively large proportion of fine material are rejected, there is not much danger of purchasing an adulterated parcel.

2. *Does bluestone deteriorate with age?*

Ordinary exposure of bluestone only leads to the loss of water of crystallization, and although much of the color is lost, the material is still a good fungicide.



3. *Are some bluestones more effective than others?*

Bluestone (copper sulphate) is a fixed chemical substance, and provided unadulterated samples are secured, they are of equal value for "pickling" seed wheat.

4. *How is it a wheat grain gets a shoot on it and no roots?*

The appearance of a shoot on a wheat grain without the formation of roots would possibly happen through some slight injury to the embryo of the seed, received at harvest-time or, at any rate, between ripening and seeding.

5. *Which starts first, when the wheat grain is germinating, the shoot or roots?*

In normal germination, the roots of the wheat-plant make their appearance before the shoot.

6. *If wheat is harrowed when just showing through the soil, and the shoots are broken off, will the plants shoot again?*

In practically every case when the shoots of the wheat-plants are broken off by harrowing, fresh growth is made to replace the parts removed. In practice it is found that wheat crops can be harrowed almost any time between seeding and until the plants are 5 in. or 6 in. in height without noticeable damage being done to the crop, and the only period when many of the young plants are likely to be killed is for that short time—possibly two days in most seasons—between germination and the growth of sufficient roots to anchor the grains in the soil properly, and what damage is then caused is wholly due to the germinating seeds being brought to the surface, where they may dry out. Once the grains are firmly held in the soil by their own roots, their shoots can be broken off a number of times, and they will again be replaced by fresh growth.

7. *Will harrowing improve a growing crop?*

In some circumstances it is advantageous to harrow a growing crop, but in the average season in our particular conditions it is not usually a business proposition.

(a) When the soil is beaten down so firmly by rain that the germinating wheat cannot push its way easily to the surface, as happens in some of our heavy-textured red soils, it is almost essential that the land be harrowed if a regular and even crop is to result.

(b) When many weeds germinate at the same time as the wheat grains, or for that matter soon afterwards, much advantage is usually obtained by harrowing the crop.

8. *What is the best stage to harrow the wheat crop?*

As the only time when it is at all risky to harrow a wheat crop is while the germinating grain is anchoring itself to the soil—and even then in most years the risk is not very great—the work should be done when it is most likely properly to do the job which is to be performed; for instance, if irregular germination is being caused by the land having run together, heavily weighed harrows should be used as soon as the soil is dry enough to take them, and if the control of weeds is the object, the harrows must be put on the crop while the weeds are still small enough to be killed by the harrowing.

## RIVER MURRAY HERD TESTING ASSOCIATION.

### RESULTS OF BUTTERFAT TESTS FOR MAY, 1922.

Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
		Per Herd during May.	Per Cow during May.	Per Cow October to May.	Per Herd during May.	Per Cow during May.	Per Cow October to May.
		Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
13	10-42	7,675	590-38	4,704-24	380-48	29-27	215-74
28-03	20-35	19,073	680-45	5,495-77	754-64	26-92	227-61
17	15-52	10,651-5	626-56	4,315-53	474-86	27-93	191-39
50	46-29	36,923-5	738-47	6,704-06	1,481-85	29-64	259-87
11-03	9-90	5,376-5	487-44	5,254-88	230-38	20-89	224-13
16-16	14-97	6,845	423-58	4,495-66	366-42	22-67	208-92
15	10-97	5,805-5	387-03	4,746-59	282-37	18-82	211-78
14-03	10-68	6,355	452-96	3,875-71	307-83	21-94	186-85
17	15	6,293	370-18	3,855-67	332-91	19-58	180-85
34-23	21-23	13,338	389-66	3,881-50	669-66	19-56	181-59
19-77	13-77	6,472-5	327-39	2,920-91	356-09	18-01	147-47
12-16	7-74	4,798	394-57	3,809-07	203-06	16-70	167-80
14	12	6,169	440-64	3,907-61	328-47	23-46	195-24
11	11	7,099	645-36	5,251-79	324-98	29-54	239-47
16	16	6,525-5	407-84	3,904-72	328-66	20-54	177-27
19-23	15-72	9,960-0	518-01	4,694-80	454-84	23-66	205-84

## BAGOT'S

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### A REMINDER TO PROPERTY OWNERS !

Men spend their time and effort in acquiring property in order to achieve financial independence. To this end they engage their resources in business and other industries, or they seek safe and profitable investments. In all these activities they direct vigorous efforts towards the protection of their property. During their lives they endeavor to guard against every change which may lessen or damage their resources, but their plans for obtaining safety often fail to take into account the one thing which is sure to happen—the death of the planner. Many owners of property seldom consider how their property is to be managed after their death to support those for whom it is their duty to provide.

HAVE YOU TAKEN STEPS SO THAT YOUR POSSESSIONS WILL  
BE ADEQUATELY PROTECTED AFTER YOUR DEATH ?

WRITE OR CALL FOR FREE BOOKLET.

## DAIRY AND FARM PRODUCE MARKETS.

A. W. Sandford & Co., Limited, reported on September 1st, 1922.

**BUTTER.**—During the month of August values in London have shown slight fluctuations, and, as our market here is ruled by values in Great Britain, any movements there have been reflected on our local market. Prospects continue very favorable with regard to supplies here, and good prices are assured for the season. At the close of the month first grade to choicest factory and creamery fresh butter in bulk sold at 1s. 6½d.; private separators and dairies at 1s. 4½d. to 1s. 5½d.; fair quality, 1s. 3d. to 1s. 4d.; store and collectors', 1s. to 1s. 2d.

**EGGS** have shown good increase in supplies, and prices realised have been considerably higher than the corresponding month of last year. Most of the pastrycooks throughout Australia have exhausted their supplies of pickles and pulp and have operated very freely here. From the present outlook prices are not likely to rule as low as they did last season, and values ruling at close of month are 1s. 2d. for fresh hen; duck, 1s. 3d.

**CHEESE.**—Very fair local trade has been put through, but there has been an absence of export trade for Western Australia owing to Queensland selling at lower prices and securing the business. However, factories here are likely to ship to London this season, and this will help to stabilise the market; present prices ruling at 7½d. to 8d. for large to loaf.

**HONEY.**—There is little, if any, alteration to report in the honey market; supplies have kept up wonderfully well, and where quality is right, good demand is ruling at 3½d. to 4d., but second grades have been neglected at 2d. to 2½d. Beeswax saleable at 1s. 8d. for good sample.

**ALMONDS.**—Only odd lots have come forward, most holders having cleared their stocks. Brandis sold at the end of the month at 1s. 1d.; mixed softshells, 1s.; hardshells, 6d. to 6½d.; kernels, 1s. 10d. to 2s.

**BACON.**—Rates have firmed somewhat during the month owing to the higher prices ruling for the animal. Best factory cured sides selling at 12½d. to 13d.; middles, 14d. to 14½d.; hams still slow of sale at 13½d. to 14d. Lard in packets, 8d.; in bulk, 7½d.

**LIVE POULTRY.**—Although heavy quantities have come forward during the month, supplies have been not nearly equal to trade requirements. Each of our three sales—Tuesdays, Thursdays, and Fridays—have been well attended by the trade and good clearances of every catalogue submitted have been effected, and prices realised have been very satisfactory to consignors. Farmers having any surplus poultry should consign; crates obtainable on application. Prime roosters, 4s. 6d. to 6s. 6d.; nice condition cockerels, 3s. 6d. to 4s. 5d.; plump hens, 4s. 6d. to 5s. 6d.; medium hens, 3s. 3d. to 4s. 5d.; some pens of weedy sorts, lower; ducks, prime condition, 4s. 6d. to 6s. 4d.; fair condition, 3s. 6d. to 4s. 5d.; geese, 5s. 6d. to 6s. 6d.; turkeys, prime condition, 1s. to 1s. 4½d. per lb.; fair condition, 9d. to 11½d.; fattening sorts, lower; pigeons, 8d. each.

**POTATOES.**—Since our last report there have been several sharp rises in prices due to the Victorian rates having firmed. There are still a few odd trucks of South-Eastern and local potatoes offering. Quotations at end of the month were—Best Victorian Snowflakes, £11 to £12 per ton; Carmens, £12 10s. to £13 on trucks, Mile End.

**ONIONS.**—These also firmed considerably in price, but the high rates retarded consumption somewhat. Values at the end of the month were from £16 to £17 on trucks, Mile End.

# IMPORTS AND EXPORTS OF FRESH FRUIT, PLANTS, ETC.

During the month of July, 1922, 720bush. of apples, 9,056bush. of bananas, 4bush. of oranges, 218bush. of passion fruit, 559bush. of pineapples, 63 packages of carrots, 9 packages of peanuts, 620 bags of onions, 21,397 bags of potatoes, 6bush. of tomatoes, 6 packages of moss, 36 packages of plants, 52 packages of trees, 27 packages of bulbs, 47 packages of seeds, 1,193 empty wine casks, were examined and admitted at Adelaide and Port Adelaide under the Vine, Fruit, and Vegetable Protection Acts, 1885 and 1910. Of these, 52 packages of trees, 2 packages of plants, and 57 empty wine casks were fumigated; 6bush. of tomatoes were rejected from the State, in the absence of the necessary papers; and 1 package of grape vines (prohibited entry) were destroyed.

Under the Federal Commerce Act, 100 packages of fresh fruit, 9,926 packages of citrus fruit, 31,053 packages of dried fruit, 112 packages of preserved fruit, 2 packages of jam, 5 packages of plants, and 1 package of honey were exported to oversea markets. These were consigned as follows:—To London—23,572 packages of dried fruit, 22 packages of preserved fruit, 2 packages of jam, 7,571 packages of citrus fruit. To New Zealand—831 packages of citrus fruit, 5 packages of plants, 4,810 packages of dried fruit, 90 packages of preserved fruit. To South Africa—2,605 packages of dried fruit. To India and East—66 packages of dried fruit, 1 package of honey, 100 packages of apples. To Canada—1,524 packages of citrus fruit.

Under the Federal Quarantine Act, 1,026 packages of seeds, &c., were examined and admitted from oversea sources; of these, 2 packages of cotton seed were destroyed.

*Interstate Imports.—Examined at Mount Gambier during July, 1922.*

	Packages.	Bushels.
Bananas . . . . .	63	94
Pineapples . . . . .	3	4
Apples . . . . .	156	156
Oranges . . . . .	6	6
Cauliflowers . . . . .	72	—
Cabbages . . . . .	24	—
Swedes . . . . .	8	—
Potatoes . . . . .	1,876	—
Fruit trees . . . . .	6	—
Shrubs and pines . . . . .	6	—

Of these, ½bush. of pineapples and 3 second-hand cases were destroyed; 4 packages of fruit trees were fumigated; and 110 bags of potatoes (scab and potato moth) were picked over.

## RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of and to the end of August, 1922, also the average precipitation to the end of July, and the average annual rainfall.

Station.	For August, 1922.	To end August, 1922.	Average to end August, 1922.	Average Annual Rainfall.
FAR NORTH AND UPPER NORTH.				
Oodnadatta .....	0.21	3.86	3.34	4.83
Marree .....	—	1.09	4.10	6.10
Farina .....	—	2.81	4.08	6.73
Copley .....	0.03	2.49	5.95	8.45
Beltana .....	0.07	3.66	6.16	9.01
Blinman .....	0.31	5.17	8.82	12.62
Tarcoola .....	0.06	2.46	3.84	7.59
Hookina .....	0.36	8.84	9.30	13.30
Hawker .....	0.78	9.75	8.87	12.72
Wilson .....	0.84	8.98	8.56	12.33
Gordon .....	0.73	7.08	7.64	11.05
Quorn .....	0.89	7.50	8.87	14.00
Port Augusta .....	0.71	7.37	6.47	9.54
Port Augusta West .....	0.90	6.64	6.41	9.53
Bruce .....	0.69	6.70	7.06	10.40
Hammond .....	0.74	7.85	7.91	11.61
Wilmington .....	1.70	12.58	12.68	18.17
Willowie .....	1.07	10.78	8.15	12.16
Melrose .....	2.51	19.34	16.41	23.21
Boaleroo Centre .....	1.29	11.58	10.50	15.53
Port Germein .....	0.74	9.07	8.66	12.79
Wirrabara .....	2.06	12.10	13.69	19.62
Appila .....	1.64	10.12	11.02	14.98
Cradook .....	0.36	8.41	7.69	11.18
Carrieton .....	1.01	8.48	8.71	12.63
Johnburg .....	0.75	9.00	8.11	10.50
Eurolia .....	1.03	8.75	9.02	13.36
Orroroo .....	1.09	9.49	9.43	13.57
Nackara .....	0.62	10.06	8.03	11.33
Black Rock .....	1.24	9.45	8.55	12.51
Ucoola .....	0.89	7.04	8.13	11.90
Peterborough .....	1.50	9.25	10.28	13.43
Yongala .....	2.16	10.87	9.62	14.41
LOWER NORTH-EAST.				
Yunta .....	0.38	4.67	5.88	8.75
Waukarina .....	0.29	3.35	5.66	8.41
Mannahill .....	0.29	2.16	5.72	8.54
Cookburn .....	0.20	3.52	7.13	8.22
Broken Hill, N.S.W. .....	0.32	4.97	—	9.91
LOWER NORTH.				
Port Pirie .....	1.10	10.70	9.17	13.36
Port Broughton .....	1.56	11.14	9.96	14.18
Bute .....	1.59	10.15	11.23	15.65
Laura .....	2.02	14.43	12.31	18.16
Caltowie .....	2.04	13.95	11.36	17.07
Jamestown .....	2.47	14.85	11.82	17.74
Bundaleer W. Wks. .....	2.55	13.99	11.80	17.89
Gladstone .....	2.21	14.84	10.71	16.13
Crystal Brook .....	1.92	12.11	10.84	15.74
Georgetown .....	2.67	17.08	12.56	18.44
Narridy .....	1.60	10.38	11.27	16.41
Redhill .....	2.76	12.85	11.85	16.75
LOWER NORTH—continued.				
Spalding .....	2.26	12.94	13.30	18.21
Gulnare .....	2.36	14.67	12.77	17.77
Yacka .....	2.02	11.91	10.59	16.16
Koolunga .....	2.30	11.40	10.81	15.42
Snowtown .....	1.90	11.58	11.42	15.42
Brinkworth .....	2.08	11.69	10.92	15.42
Blyth .....	2.18	14.22	11.70	17.15
Clare .....	3.86	22.13	17.15	21.06
Mintaro .....	4.38	22.03	21.06	24.20
Watervale .....	4.42	24.20	19.16	24.20
Auburn .....	4.21	20.51	16.91	20.51
Hoyleton .....	3.04	15.28	12.27	15.28
Balaklava .....	1.50	12.96	10.90	12.96
Port Wakefield .....	1.69	9.44	9.53	10.90
Terowie .....	1.54	10.15	9.02	10.15
Yarowrie .....	1.43	12.42	9.47	12.42
Hallett .....	2.13	11.00	10.95	11.00
Mount Bryan .....	2.46	11.75	11.08	11.75
Koorunga .....	2.71	15.19	12.35	15.19
Farrell's Flat .....	2.88	14.63	13.12	14.63
WEST OF MURRAY RANGE.				
Manoora .....	3.54	17.79	15.13	17.79
Saddloworth .....	2.85	16.06	13.65	16.06
Marrabel .....	3.48	18.01	13.33	18.01
Riverton .....	3.01	18.04	14.33	18.04
Tarlee .....	3.54	17.17	12.10	17.17
Stockport .....	2.04	15.23	10.94	15.23
Hamley Bridge .....	2.34	13.50	11.21	13.50
Kapunda .....	3.35	15.73	13.69	15.73
Freeling .....	2.33	15.41	12.21	15.41
Greenock .....	3.06	17.42	13.71	17.42
Truro .....	2.69	15.60	13.91	15.60
Stockwell .....	2.52	15.85	13.88	15.85
Nuriootpa .....	2.15	15.97	14.45	15.97
Angaston .....	2.85	18.41	15.50	18.41
Tanunda .....	2.76	17.59	15.52	17.59
Lyndoch .....	2.49	17.29	15.94	17.29
Williamstown .....	3.10	19.72	19.88	19.72
ADELAIDE PLAINS.				
Mallala .....	2.34	13.45	11.52	13.45
Roseworthy .....	2.05	12.98	11.86	12.98
Gawler .....	1.78	12.99	13.41	12.99
Two Wells .....	1.37	11.90	11.29	11.90
Virginia .....	1.80	11.45	12.25	11.45
Smithfield .....	2.15	12.91	11.82	12.91
Salisbury .....	2.44	14.50	13.23	14.50
North Adelaide .....	2.92	20.04	15.83	20.04
Adelaide .....	2.55	16.83	15.18	16.83
Glenelg .....	2.03	15.24	13.23	15.24
Brighton .....	2.01	16.23	14.57	16.23
Mitcham .....	3.41	24.89	17.39	24.89
Glen Osmond .....	3.43	23.93	18.68	23.93
Magill .....	3.26	21.23	18.23	21.23

RAINFALL—continued.

Station.	For August, 1922.	To end August, 1922.	Av'ge. to end August, 1922.	Av'ge. Annual Rainfall	Station.	For August, 1922.	To end August, 1922.	Av'ge. to end August, 1922.	Av'ge. Annual Rainfall
<b>MOUNT LOFTY RANGES.</b>					<b>WEST OF SPENCER'S GULF—continued.</b>				
tree Gully .....	4-81	19-50	20-68	27-77	Port Lincoln .....	2-42	13-08	14-32	19-75
ling West .....	8-44	41-97	33-04	46-62	Tumby .....	1-08	8-59	10-02	14-62
idla .....	8-07	40-18	32-23	44-06	Carrow .....	1-64	7-20	9-38	14-64
rendon .....	4-24	29-11	24-00	32-98	Arno Bay .....	1-12	5-64	8-87	13-08
phett Vale .....	2-84	19-83	16-27	22-76	Cowell .....	0-73	5-41	6-97	11-52
arunga .....	2-64	16-75	14-73	20-27	Minnipa .....	1-78	8-00	—	—
lunga .....	3-01	24-15	18-87	25-87					
lunga .....	2-46	17-86	13-79	20-24					
inga .....	3-53	26-20	20-62	28-44					
ponga .....	2-47	19-98	15-27	20-51					
rmanville .....	2-74	22-40	17-01	22-99					
akallila .....	4-20	23-40	19-32	27-04					
unt Pleasant .....	4-38	21-60	20-92	29-26					
dwood .....	5-59	25-47	23-87	33-25					
meracha .....	6-23	33-97	—	—					
lbrook Reservoir .....	5-60	25-52	25-60	35-54					
eedvale .....	4-11	25-86	22-88	32-08					
odside .....	4-91	28-25	24-66	34-62					
bleside .....	3-56	20-71	20-08	28-43					
irne .....	4-86	27-43	22-15	31-13					
unt Barker .....	4-69	27-79	23-59	32-91					
lunga .....	4-11	24-28	21-38	30-53					
oclesfield .....	4-89	29-84	25-51	36-04					
adows .....	2-58	15-19	13-58	19-26					
athalbyn .....									
<b>MURRAY FLATS AND VALLEY.</b>					<b>YORK PENINSULA.</b>				
zingie .....	3-01	10-80	12-26	18-66	Wallaroo .....	1-25	8-68	10-32	14-09
lang .....	1-75	12-74	10-89	15-42	Kadina .....	1-78	10-32	11-80	15-93
ngborne's Creek .....	2-36	14-36	9-86	14-55	Moonta .....	1-66	9-63	11-29	15-25
llington .....	1-71	11-74	9-84	14-68	Green's Plains .....	2-00	10-36	11-52	15-72
ilem Bend .....	2-18	11-89	9-40	14-11	Maitland .....	2-39	13-56	14-73	20-05
urray Bridge .....	1-62	10-32	9-36	13-83	Ardrrossan .....	2-09	10-87	10-15	13-95
llington .....	2-15	12-91	10-70	15-37	Port Victoria .....	2-22	11-44	11-28	15-35
unnum .....	1-72	9-43	8-01	11-62	Curramulka .....	1-87	11-36	13-27	18-16
lmer .....	1-90	10-32	10-16	15-24	Minlaton .....	1-75	11-96	13-67	17-79
lan .....	1-13	8-68	8-47	12-13	Brentwood .....	1-60	10-75	11-31	15-54
an Reach .....	0-70	7-27	7-05	10-82	Stansbury .....	2-16	11-11	12-31	16-06
anchetown .....	0-36	4-22	8-78	10-16	Warooka .....	2-39	14-12	13-25	17-69
adunda .....	1-85	12-62	11-34	17-50	Yorketown .....	1-95	11-51	12-61	17-22
therlands .....	1-18	8-76	7-21	10-92	Edithburgh .....	2-45	11-84	11-97	16-53
rgan .....	1-13	6-72	5-92	9-18					
ukerie .....	0-72	6-13	6-06	9-68					
erland Corner .....	0-30	6-09	7-09	11-08					
xtion .....	0-66	9-07	8-00	12-68					
mmark .....	0-47	7-58	6-80	11-02					
<b>WEST OF SPENCER'S GULF.</b>					<b>SOUTH AND SOUTH-EAST.</b>				
icla .....	0-35	7-47	7-40	10-02	Cape Borda .....	4-13	19-96	19-68	25-01
hite Well .....	0-22	9-16	6-49	9-10	Kingscote .....	2-50	12-55	14-50	19-01
hler's Bay .....	0-50	8-82	9-47	12-19	Penneshaw .....	3-63	14-48	14-24	18-97
mong .....	1-01	10-04	9-55	12-25	Victor Harbor .....	2-57	17-51	15-34	21-43
duna .....	0-72	6-05	7-29	10-32	Port Elliot .....	2-67	17-90	13-27	20-00
oky Bay .....	0-94	8-65	8-33	10-92	Goolwa .....	2-19	12-26	12-66	17-83
aina .....	1-37	0-23	9-40	13-05	Meribah .....	0-66	8-56	—	—
reaky Bay .....	1-88	11-07	11-45	15-11	Mindarie .....	1-01	6-81	—	—
lia .....	2-12	10-10	11-08	15-33	Karoonda .....	1-71	11-72	—	—
rt Elliston .....	2-77	14-08	12-79	16-53	Pinnaroo .....	0-91	8-61	10-38	15-32
mmins .....	2-73	12-57	—	18-87	Parilla .....	1-07	9-11	9-34	14-39
					Lameroo .....	1-06	10-16	10-43	16-27
					Parrakie .....	1-86	9-98	9-30	14-27
					Geranium .....	2-92	15-47	10-56	15-96
					Peake .....	2-52	12-72	9-77	15-91
					Cooke's Plains .....	2-21	13-44	10-14	14-84
					Coomandook .....	2-40	13-41	11-85	17-31
					Coonalpyn .....	2-48	12-12	11-96	17-44
					Tintinara .....	2-77	14-25	12-46	18-54
					Keith .....	2-10	13-56	11-96	18-19
					Bordertown .....	2-30	11-57	13-06	19-44
					Wolseley .....	2-71	11-86	12-06	18-06
					Frances .....	2-55	12-01	—	19-78
					Naracoorte .....	3-68	15-84	15-45	22-46
					Penola .....	3-47	16-02	18-31	26-36
					Lucindale .....	3-56	16-46	16-32	22-91
					Kingston .....	3-73	20-33	18-02	24-44
					Robe .....	5-66	24-53	18-63	24-58
					Beachport .....	3-98	20-21	20-91	27-27
					Millicent .....	5-38	23-00	21-84	29-37
					Kalangadoo .....	4-75	21-59	—	—
					Mount Gambier .....	4-79	19-34	22-12	31-46

## AGRICULTURAL BUREAU REPORTS.

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Branch.	Report on Page	Dates of Meetings		Branch.	Report on Page	Dates of Meetings	
		Sept.	Oct.			Sept.	Oct.
Alawoona .....	†	—	—	Gawler River .....	*	4	2
Aldinga .....	†	—	—	Georgetown .....	*	2, 30	—
Amyton .....	*	4	9	Geranium .....	†	30	28
Angaston .....	*	—	—	Gladstone .....	†	1	6
Appila-Yarrowie .....	*	—	—	Glencoe .....	†	—	—
Arthurton .....	†	—	—	Glossop .....	*	—	—
Ashbourne .....	*	—	—	Goode .....	*	6	4
Balaklava .....	*	9	14	Green Patch .....	†	4	2
Balhannah .....	†	1	6	Gumeracha .....	194	4	9
Barmora .....	†	5	3	Halidon .....	†	—	—
Beetaloo Valley .....	†	4	—	Hartley .....	†	6	4
Belalie North .....	*	2, 30	—	Hawker .....	*	6	3
Berri .....	190	6	4	Hilltown .....	*	—	—
Big Swamp .....	*	—	—	Hookina .....	172	—	2
Blackheath .....	†	2, 30	—	Inman Valley .....	*	—	—
Black Springs .....	†	5	3	Ironbank .....	*	2, 30	—
Blackwood .....	191	18	16	Julia .....	*	—	—
Block E .....	†	—	—	Kadina .....	*	—	—
Blyth .....	†	2	7	Kalangadoo .....	*	9	14
Booloroo Centre .....	177	1	6	Kangarilla .....	195	8	—
Borriha .....	†	—	—	Kanmantoo .....	*	9	7
Bowhill .....	†	—	—	Keith .....	†	—	—
Brentwood .....	183	—	5	Ki Ki .....	*	—	—
Brinkley .....	†	2, 30	—	Kilkerran .....	184	—	13, 31
Bundaleer Springs .....	†	4	2	Kimba .....	*	—	—
Burra .....	*	—	—	Kingscote .....	*	—	—
Bute .....	†	5	3	Kingston-on-Murray .....	*	—	—
Butler .....	188	—	—	Kongorong .....	†	7	5
Cadell .....	†	—	—	Koombba .....	184, 189	1	6
Canowie Belt .....	*	—	—	Koppio .....	†	4	2
Carrow .....	†	2	5	Kybybolite .....	200	7	5
Cherry Gardens .....	†	5	3, 31	Lake Wangary .....	†	2, 30	—
Clanfield .....	*	—	—	Lameroo .....	*	8	6
Clare .....	178	1	6	Laura .....	177	9	7
Clarendon .....	*	4	2	Leighton .....	*	—	—
Claypan Bore .....	*	6	4	Lenswood and Forest Range .....	*	3	2
Cleve .....	†	6	4	Lone Gum .....	†	6	11
Collie .....	†	—	—	Lone Pine .....	*	—	—
Colton .....	*	29	27	Longwood .....	198	9	7
Coomandook .....	†	6	4	Loxton .....	†	—	—
Coomalpyne .....	*	1	13	Lucindale .....	†	—	—
Coonawarra .....	*	—	—	Lyndoch .....	182	—	—
Coorabie .....	†	—	—	McLachlan .....	184	—	—
Craddock .....	*	—	—	Maitland .....	†	—	5
Crystal Brook .....	*	2, 30	—	Mallala .....	178	4	2
Cygnets River .....	*	—	5	Maltee .....	†	1	6
Dawson .....	*	—	—	Mangalo .....	*	—	—
Denial Bay .....	*	—	—	Marama .....	†	—	—
Dowlingville .....	*	—	—	Meadows .....	*	6	11
Edithlie .....	†	30	28	Meningie .....	*	—	—
Elbow Hill .....	*	12	10	Milang .....	*	9	13
Eurelia .....	†	8	6	Millicent .....	199	2	7
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Freeling .....	*	—	—				

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Minlaton .....	•	1	6	Bookwood .....	199	4	2
Minnipa .....	•	6	4	Rosedale .....	180	—	—
Mintaro .....	172	2	7	Roy Pine .....	•	—	—
Monarto South .....	189	2, 30	—	Saddleworth .....	•	—	—
Moonta .....	†	1	6	Saddleworth (Women's)	†	—	—
Moorak .....	†	—	5	Salisbury .....	†	5	3
Moorlands .....	•	—	—	Salt Creek .....	•	—	—
Mooreook .....	†	—	—	Sandalwood .....	†	—	—
Morchard .....	†	2, 30	—	Second Valley .....	•	—	—
Morgan .....	•	—	—	Shoal Bay .....	†	5	3, 31
Morphett Vale .....	190	7	5	Smoky Bay .....	189	2, 30	—
Mount Barker .....	†	6	4	Spalding .....	•	—	—
Mount Bryan .....	174	—	—	Stockport .....	182	—	—
Mount Byrnes East ..	•	—	—	Streaky Bay .....	185	—	—
Mount Compass .....	•	—	—	Strathalbyn .....	†	5	3
Mount Gambier .....	†	9	14	Talia .....	188	11	9
Mount Hope .....	•	2	7	Tantacoola .....	•	2	7
Mount Pleasant .....	199	8	13	Taplan .....	•	9	7
Mount Remarkable ..	†	—	—	Tarcoowie .....	†	5	3
Mundalla .....	†	6	4	Tarlee .....	†	—	—
Murray Bridge .....	190	19	19	Tatiara .....	†	16	21
Myponga .....	†	6	4	Two Wells .....	†	—	—
Nantawarra .....	180	—	5	Uraidla & Summertown	•	4	2
Naracoorte .....	†	9	14	Veitch .....	•	—	—
Narriby .....	176	9	7	Virginia .....	181	—	—
Narrung .....	•	9	7	Waikerie .....	•	—	—
Neets .....	•	—	—	Wall .....	•	—	—
Netherton .....	•	—	—	Wanbi .....	†	7	5
North Booborowie ..	†	—	—	Warcoowie .....	•	—	—
North Bundaleer ..	•	—	—	Watervale .....	•	—	—
Northfield .....	•	13	11	Weavers .....	•	4	2
Nunkeri and Yurgo ..	•	3	1	Whyte-Yarcoowie ..	•	—	—
O'Loughlin .....	•	6	4	Wilkawatt .....	†	2	7
Ororoo .....	†	—	—	Williamstown .....	†	6	4
Owen .....	182	1	6	Williamstown (Women's)	•	—	—
Parilla .....	†	—	—	Williamstown .....	†	1	6
Parilla Well .....	190	4	9	Willowie .....	†	6	4
Parrakie .....	•	—	—	Wilmington .....	†	6	4
Paruna .....	190	—	—	Windsor .....	†	—	—
Paskeville .....	†	6	3, 31	Winkie .....	†	—	—
Pata .....	†	—	—	Wirrabara .....	•	2	7
Penola .....	200	2	7	Wirrega .....	200	—	—
Petina .....	†	30	28	Wolowa .....	•	—	—
Pinnaroo .....	•	8	6	Wudinna .....	•	2	7
Pompoata .....	†	13	11	Wynarka .....	190	2	7
Port Broughton .....	•	1	6	Yabmana .....	•	—	—
Port Elliot .....	†	16	21	Yacka .....	†	5	3
Port Germein .....	•	9	7	Yadnarie .....	†	5	3, 31
Pygery .....	185	—	2, 30	Yallunda .....	•	—	—
Ramco .....	†	4	2	Yanmce .....	•	—	—
Rapid Bay .....	†	2	7	Yeelanna .....	†	2	7
Redhill .....	†	4	10	Yongala Vale .....	•	—	—
Rendelsham .....	•	6	4	Yorketown .....	•	—	—
Renmark .....	190	—	—	Youghusband .....	190	7	5
Riverton .....	•	—	—				

\* No report received during the month of August.  
† Annual Meeting.

‡ Held over until next month.  
§ Formal.



## THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

Every producer should be a member of the Agricultural Bureau. A postcard to the Department of Agriculture will bring information as to the name and address of the secretary of the nearest Branch.

If the nearest Branch is too far from the reader's home, the opportunity occurs to form a new one. Write to the department for fuller particulars concerning the work of this institution.

### REPORTS OF BUREAU MEETINGS.

#### UPPER-NORTH DISTRICT.

(PETERBOROUGH AND NORTHWARD.)

HOOKINA (Average annual rainfall, 12in.).

August 3rd.—Present: nine members and two visitors.

IMPROVEMENT OF FARM STOCK.—"I think the horse is one of the most important animals on the farm, and favor the three-quarter draught in preference to the heavier animal for work on the farms in this district," said Mr. F. Cagney, in a paper under the above heading. Referring to cattle, the writer considered the milking Shorthorn to be the best breed, as the cows were good milkers and could be fattened into prime beef. Sheep also played an important part in the successful working of the holding, and they could be kept on the farm for wool or fattened and sold as mutton. For the breeding of all classes of farm stock it was essential that the services of pure-bred sires should be obtained. In the discussion that followed members agreed that the pure Merino was the breed of sheep best suited to the conditions of that district.

#### MIDDLE-NORTH DISTRICT.

(PETERBOROUGH TO FARRELL'S FLAT.)

MINTARO.

July 8th.—Present: eight members.

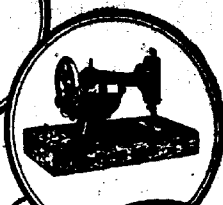
CAN FARM LIFE BE MADE MORE ATTRACTIVE? "To this question I answer yes, particularly if the following points are more generally adopted: decentralisation, improved and more economical methods of farm working, and the betterment of social facilities," said Mr. L. S. Moore, in a paper dealing with above question. The speaker held the opinion that decentralisation was a most important point, and was necessary to give an impetus to rural life. He also considered that the shortening of the working hours on farms would induce more lads to remain in the country instead of going to the city for a job. Much would also be done by the introduction of more labor saving devices and machinery. With the aid of a tractor, the work could be performed in less time and the need for attending to the horses at early and late hours would be eliminated. Again the use of motor power for such work as raising water, the laying on of a water supply to the homestead, and the installation of electricity for lighting purposes and working the washing machine, &c., would make farm life considerably more comfortable and enjoyable. With such improvements, and the addition of a motor car and a telephone, the speaker believed that the farmer would have the time and the means to improve the social conditions of country life. The formation of social and sports clubs, literary and choral societies, would also make for the betterment of life in rural districts. He also thought that farmers could hold more social gatherings at their homesteads than was now the practice, and the provision of an up-to-date institute with a selection of the latest and best magazines and books would, in most country towns, be a decided acquisition. He was strongly of the opinion that with improved living conditions and better means of communication the life of the farmer would lose much of its isolation and loneliness and so make the life of the rural worker more attractive in every way.



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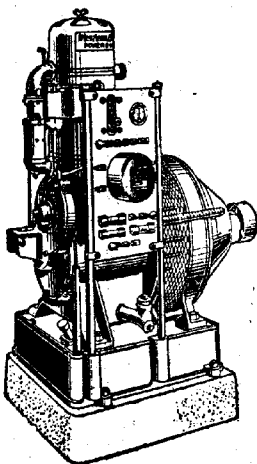
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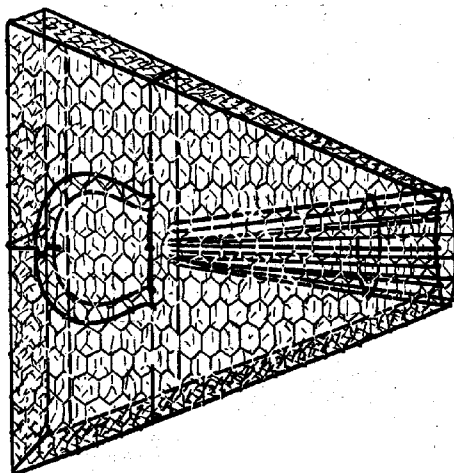
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MOUNT BRYAN (Average annual rainfall, 15.9 in.)  
 July 1st.—Present: nine members and four visitors.

**THE TRAINING OF SHEEP DOGS.**—The following paper was read by Mr. M. Wardle:—A sheep dog puppy ought to inherit a desire for working sheep, consequently it is of the utmost importance, and I cannot too strongly emphasise this point, that his parents should be not only good workers, but bred from a reliable working strain. A breeder should thoroughly understand the characteristics of each dog and use judicious care in mating so as to obtain the desired results in their progeny. However, the beginner will probably have to purchase his puppy, and my advice is—buy the very best obtainable, and endeavor to get into communication with someone who not only has a pure strain of good working dogs, but also has a reputation as a successful breeder. He will undoubtedly require a fair price, but if you secure the right dog to commence with it should prove a good investment. If the dog and bitch can be seen working so much the better. Take possession of the puppy at about eight weeks old, feed him well, keep him in a clean healthy condition, and allow him all the freedom possible. Should the chickens or cats get chased occasionally do not think any the worse of him. The main thing is to develop bone and muscle in readiness for the days ahead, and this can only be done by good feeding and plenty of exercise. Many a promising puppy has been spoiled physically and mentally by being kept chained up, his only recreation being to bark for liberty. All the time he is running about, and seeing what goes on, he is, to a certain extent being educated, and at the same time gaining confidence in his own abilities. Give him a name early and he will soon answer to it. At about five months old teach him to lead by means of a piece of cord. If, during his puppy days, he has been petted by other members of the household, such a practice should now cease altogether. He must only recognise one master, otherwise time spent in attempting to educate him is practically wasted. Gain his affection by kindness, remembering always that it is by a judicious mixture of kindness and firmness that ultimate success will be assured. Do not lose patience when he makes mistakes, for an excitable man always transmits the same propensity to his dog. As soon as the puppy has been taught to lead, and will follow at heel, he should be initiated into the first degree, which is to lie down when commanded. This is done by securing him with his leading cord and pressing him down gently, but firmly, with one hand, repeating the words "Lie down." A few repetitions and he will go down by simply raising the hand and giving a command. Next, use a whistle to drop him, raising the hand as before, and he will soon obey the command when off the lead. When told to lie down make him keep in that position until ordered to move. Then increase the length of the cord, command him to lie down, and then say "Come here," and bring him straight up to your feet. Repeat this as before until he has thoroughly mastered this lesson. Let him understand that you approve of his obedience and he will instantly respond. A little coaxing is always necessary, but there must be no fondling or caressing one minute, and a harsh word, or a cut with a stick the next. There is no fixed age for a dog to commence work. The animal alone can decide that. Some are anxious to run at five months, whilst others will not look at a sheep until they are nine or ten months old. The bitch usually shows the first inclination to work, but it is a mistake to allow a puppy to commence work before it has developed a fair amount of speed, no matter how keen it may appear to be. The trainer must use his own discretion on this point. Generally speaking, at about six or seven months old they are ready, providing the inborn tendency has sufficiently developed. Never allow him to run after another dog that is working. Have a few sheep in a small paddock, and if possible gather them together with an aged or quiet dog, and then when about 20 yards distant let the youngster off, and at the same time make a slight hissing noise through your teeth. This will not influence him at first, but he will eventually pick it up as the signal to go, and later on, it can easily be changed to the whistle for casting out. The puppy will probably run around the sheep, but try and keep them together so as to prevent him breaking in, and on no account check him, no matter what kind of a performance he makes. It is best to let him think that his work meets with your approval. After a few similar visits to the paddock his keenness for work will have prepared him for further lessons. These must be gradually instilled into him, and the first

and foremost is to bring the sheep towards his trainer. Command him to lie down when directly behind the sheep, taking care to keep him lying until the sheep move forward. The trainer should keep in front of the flock and allow the dog to come on quietly, and he will soon understand that it is his duty to bring forward the sheep. At this stage it requires all the patience and forbearance of the trainer. Do not hurry things or attempt to command too much, it may damp his ardour just when he is beginning to feel his feet. At first it is of no great importance on which hand he takes to circle his sheep; let him get keen enough, then teach him to cast from either hand, taking care not to have the sheep too far away so as to avoid crossing. A young dog with a naturally wide cast is to be admired, and his trainer knows he is handling one bred on the right lines. Should this propensity not be evident extra schooling is necessary. When close at hand move the sheep quickly forward, keeping the dog at heel, and watch which way they are heading, if to the left lie the dog a few yards to your right, bring him around behind you and he will make a cast to head the sheep. From whichever hand you wish him to run, always bring him around behind to make a wide sweep out. A young dog can never run too widely, and incidentally this teaches him to "lift" in a proper manner. Fairly active sheep are most suitable to use for training a puppy. So soon as sufficient progress has been made the trainer should teach his dog to run out when the sheep are not in sight. Be absolutely sure the sheep are just over some rising ground, and after starting the dog well out, run forward to watch his movements. Never disappoint him by sending him out where there are no sheep. Corporal punishment should be the last resource, and then only if the dog is caught redhanded in what might ultimately become a bad habit. In that case, after punishing him give him an opportunity to repeat the offence, and command him sternly before he can again carry out his intention if he shows any inclination to do so. When punishment is necessary take the puppy by the back of the neck and shake him. This will have the desired effect, and is

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much preferable to using a stick or whip. Refrain from shouting or whistling loudly to the dog when close at hand, as this will tend to spoil him for commanding at a distance. Strict discipline is the first plank in training, but it is most essential that there should be a complete understanding between man and dog. Study the puppies' temperament; a strong tempered dog will need much firmer handling than a quiet even tempered one. But whatever his nature, if he is of the right working strain and trained patiently and carefully on these lines I feel sure he will be both a credit and a pleasure to his owner. With regard to training for sheep dog trials, some trainers thrash their dogs into obedience and will put him "through his paces" before taking him near the sheep. On a small trial ground, where the dog is practically under his master's stick the whole time, he may put up a successful run, but from experience in all classes of sheep dog trials I am confident that such a dog would not have any chance of success if competing on a large trial ground, where the "run out" is over half a mile on the slope of a hill, and the dog has to carefully guide his sheep through various obstacles on the return journey. For a man to successfully handle a dog in the distance, and in fact to get the best results at all times, there must be complete confidence between the dog and the man. No cringing fear on the part of the dog, but an affectionate obedience, an anxiety to do just what his master commands at each whistle or sign. When thrown on his own initiative, as must happen when the sheep to be brought in are out of his master's sight, he will use that marvellous and almost human intelligence inherited from a long line of working ancestors and brought out and perfected by skillful training.

FALLOWING.—"This, to my mind, is one of the most important operations of the farm because if it is not done at the right time when the soil is in the right condition it will make a big difference to the crop at harvesting," said Mr. T. M. Jefferies in a paper under the above heading. He said the work should be commenced as soon after seeding as possible, because if the land was too wet hard lumps of earth formed which could not be worked down to a fine and even tilth. Again, if all was in readiness for an early start, the farmer could afford to wait until the weather was suitable. By the time seeding was finished most of the weed seeds would have germinated in the paddock that was to be fallowed, thereby affording an opportunity of killing the rubbish. Again, by having early fallow, one had more time during the spring in which to work the land. He considered that the depth of ploughing depended a good deal on the depth of soil above the clay, but as a general rule he thought from 3in. to 4in. was sufficiently deep for ordinary fallowing, but he would give the land a deep ploughing, say, from 4½in. to 5in. every five or six years, for such a practice brought soil to the surface that had been spelling for some time.

NARRIDY (Average annual rainfall, 16.79in.).

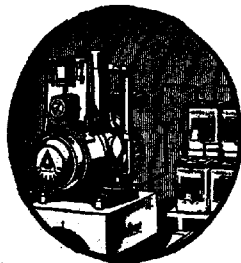
July 13th.—Present: 11 members.

PREPARATION OF LAND FOR SEEDING.—Mr. W. G. Johncock, who contributed a paper dealing with this subject, said if stubble land was to be fallowed it was most important that a good burn should be secured, but as two of the best wheats for their district—Early Oluyas and Florence—were not of much value for stock grazing after the wheat had been reaped, he thought it a good plan to attach a roller to the reaping-machine to knock the straw down to assist the fire. Unless that was done it would be a difficult matter to deal with the rubbish whilst ploughing. The best fallowing implement he considered to be the plough. He would work the land to a depth of 3in. Work should be commenced directly after the completion of seeding, and the surface of the land should be left somewhat rough. After the fallowed land had been allowed to lie undisturbed for some little time, he suggested the use of the harrows, working the implements in a different direction at each time of working. He believed that it was most necessary that a flock of sheep should be grazed on the fallow, not only to keep the weeds in check, but to assist in packing the soil. It was to be regretted that in those districts where it was the practice to crop and fallow the land alternately, the farmers were not able to keep sufficient numbers of sheep. It would be a good plan if each farmer was able to have 200 acres of rough land in addition to the cultivating land, so that he could keep a permanent flock of sheep. Cultivation of the fallow should be completed before the commencement of the hay harvest, and for that work he gave preference

to the 12ft. spring-toothed implement; but should the land be carrying a rank growth of weeds, and especially wild turnip, a tyne implement should be brought into operation. If the paddock that was being cultivated contained undulating land, then it would be advisable to use a 7ft. 6in. implement, as the wider machines could not deal with the weeds so effectively. The harrows should be worked on every occasion when sufficient rain fell to render such work possible. An interesting discussion followed.

BOULEROO CENTRE, July 7th.—On the occasion of the annual meeting the report of the work performed by the Branch during the past year was presented by the Hon. Secretary (Mr. M. J. Carey), and the officers were elected for the ensuing term. Mr. J. B. Harris (Orchard Inspector and Instructor) was present, and delivered an address.

LAURA, July 12th.—The Director of Agriculture (Professor Arthur J. Perkins) attended the meeting and lectured on the subject, "Herd Testing Societies."



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## LOWER-NORTH DISTRICT.

## 'ADELAIDE TO FARRELL'S FLATS'

CLARE (Average annual rainfall, 24.30in.).

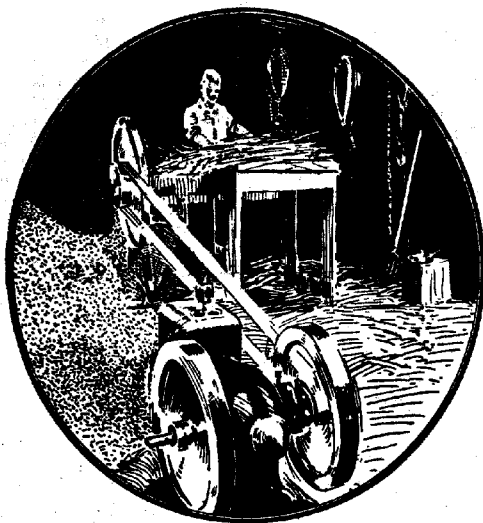
June 9th.—Present: 14 members.

THE ADVANTAGES AND BENEFITS TO BE DERIVED FROM BEING A MEMBER OF THE AGRICULTURAL BUREAU.—Mr. T. G. Victorson, who read a short paper dealing with this subject, said in those districts where there was a Branch of the Agricultural Bureau the farmers were able to meet together and discuss with fellow producers their successes and their failures. To a newcomer to a district the Bureau was especially valuable, for it gave him the opportunity of learning from older settlers in the district the best cereals, &c., to grow and the best method of working the land. Again, members of the Bureau were brought into touch with the expert officers of the Agricultural Department, who were always willing to give advice to the man on the land. In addition to the above, each member of a Branch of the Bureau received free of charge a copy of the *Journal of Agriculture*, which contained the reports of the doings of agriculturists from all over the State, and also the results of experiments carried out on the various Government experimental farms. The Roseworthy Agricultural College, he considered, was an institution that was doing an immense amount of good to the man on the land, for it enabled him to procure seed true to type. By taking an interest in the work of the Branch and attending regularly, each member should have something to teach and learn from his fellow member.

MALLALA (Average annual rainfall, 16.88in.).

July 17th.—Present: 10 members.

PIG RAISING ON THE FARM.—Mr. W. March, who read a paper dealing with this subject, said in the first place, the farmer who intended raising pigs should provide suitable accommodation for the pigs. On the majority of farms anything was considered good enough for a pig. It was not the tidiest of animals when it was put into a new house. The first thing it did was to try the floor with its snout, and if it was not made of something solid it would soon be damaged. The speaker thought that the floor should be made of some solid material and sloped to provide for proper drainage. To make a success of the venture a pig-proof paddock of about two acres sown with barley, with a stack of straw in the centre for shelter, should be provided. The next consideration should be the selection of good quality sows. Whatever the breeder's choice of breed might be, the pigs should be of good quality and true to type. It did not pay to breed from mongrel sows. It was equally important to use a well-bred boar. Under the present conditions it was questionable whether pig-raising was a profitable business, except, of course, in the case of those that kept cows and separated the milk. Where separated milk was available pigs were almost a necessity, but when they had to be fed entirely on corn it was doubtful whether, after an allowance had been made for the amount of time occupied in feeding, &c., there was very much profit to be derived from them. The writer held the opinion that the time was not far distant when the pig would prove a source of great wealth to the State. Present conditions were not very encouraging, for all the producers had to depend upon was the limited local demand. When that was over supplied down came the price of pigs, and breeders ceased raising pigs. After a time supplies became scarce, and the price improved, and breeders again commenced to rear pigs. Such a state of affairs was responsible for the fluctuation of the markets. Before pig-raising could become an established industry, it would be necessary to secure and establish a permanent overseas market. Such prospects appeared to be exceedingly good. Great Britain was a heavy importer of pig products, and at present drew the greater part of her supplies from the United States and Canada. The question was, "Why cannot we share in this demand?" South Australia would not be up against competitors with an advantage of low wages and low standards of living, but would be competing with some of the most progressive nations in the world. In America the staple product for fattening pigs was maize, whereas in Australia barley could be used to a very large degree. As it had been



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advocated by the Director of Agriculture (Professor Perkins), South Australian farmers could grow barley as a second crop and feed it to pigs, thereby largely increasing the income from the farm.

#### NANTAWARBA (Average annual rainfall, 15.90in.).

August 3rd.—Present: six members.

TAILING LAMBS.—Mr. F. Sutton, in opening a discussion on this subject, said the searing of the lambs' tails stopped the bleeding, but he favored the use of a knife, and considered that a little bleeding had no detrimental effect on the lambs, provided they were in good condition. Mr. W. Dixon stated that he had had considerable experience with the searing-iron, and that it was inclined to make the wound fester after the tails had been removed. He thought a better method would be to chop the tails off on a solid block. When the tail was held and cut with a knife, there was a tendency to draw the skin away from the bone, and after the tail had been removed, the end of the tail was left bare and would not heal so quickly.

#### ROSEDALE.

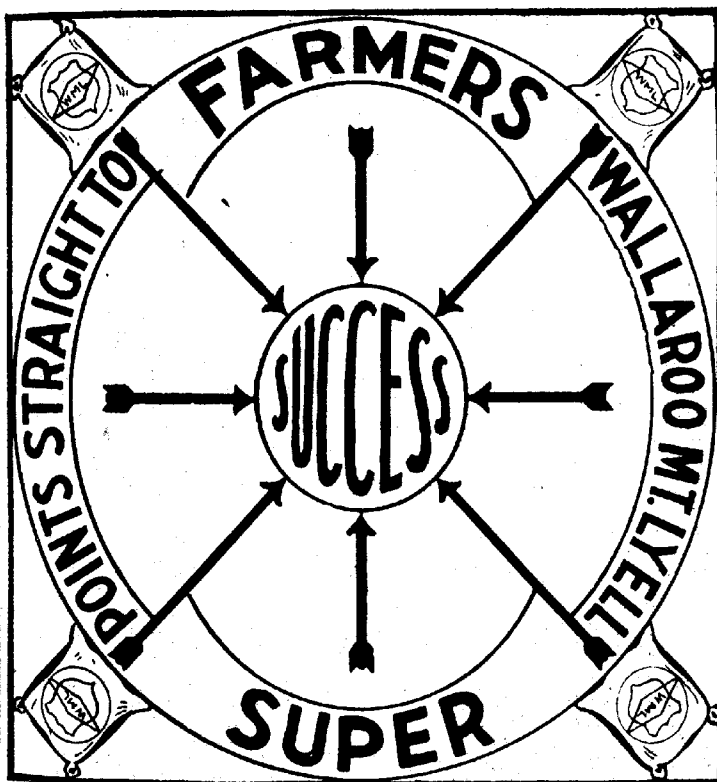
July 5th.—Present: 17 members and two visitors.

COLT BREAKING FOR FARM WORK.—Mr. H. Koch read the following paper:—  
 "When breaking in a colt he should not be less than three years of age, so that he has all his strength before he starts his working career, which should take place a few weeks before seeding. The colt should be given a few hours' work every day in order to get his shoulders accustomed to the work. First of all, there should always be two men engaged when breaking in the colt. When the colt is taken from the paddock he should be first run into a loose box, which should be surrounded with a good railing fence, or a good stone wall, to prevent the young horse from getting away when tackled. When attempting to catch the colt, a long, thick rope, with a 2in. ring on one end, should be used, so that when the sling is made the rope will slip freely. Then throw the sling gently over the colt's head, or if he is very wild, place the sling on a long stick, and then put it over the colt's head. After the animal is caught, it should be given to understand that the person breaking him in is his master, and that he will not be hurt. Next, put on the blinkers, or a headstall; personally I favor the blinkers. When putting these on, do not face the colt with the blinkers, but try and bring the blinkers, with the bit unbuckled, from the back, over his ears, and then place the bit in his mouth. The colt should remain with the blinkers on for several hours before any further teaching, to enable him to become used to the bit. When taking the colt out of the loose box a strong rope should be used. Put the rope through the near-side bit ring, with a loop, taking it under the jaw, and then tie it on to the off-side ring of the bit, to prevent the bit from pulling through the colt's mouth. If this is done it will also be found that the colt can be held without any difficulty. The colt should then be run around in a circle, first one way, and then the other, to give him a little more education in mouthing. Next, the colt should be driven around the yard, and then taught to stop and start. When this has been repeated for a time he should be taken into a fallow paddock, and harnessed to a light log or a sledge. Then the animal should be taught to pull, and should be again driven left and right, so as to get him used to the chains. For further education the colt should be put into a spring wagon with a reliable horse, and if this is carried out correctly there should be no further trouble when putting the colt into a larger team. The best plan is to work the young colt on the near side of the team, for if anything goes wrong when working the colt in the middle of the team, there will be considerable difficulty in getting among the other horses to set the colt free. Before putting the colt to any work, a set of good-fitting harness should be selected. If the colt's shoulders become scalded at the end of the day's work attention should be given to the draught of the harness. Particular care should be taken of the colt's shoulders every morning. First groom them well, and then see if the sores are better or worse. Do not apply any ointment on the sores whilst working. This will only irritate the shoulders. When the colt is not working I favor an application of medicated oil. It keeps off the flies and heals the sores. The colt should not be worked more than eight hours a day, nor after the sun has

VIRGINIA.

July 5th.—Present: 18 members.

**WORKING A 160-ACRE FARM.**—In the course of a paper dealing with this subject Mr. C. Stevens said he intended to relate his experiences on a 160-acre farm in the Virginia district and on which he had made a success. The holding should be divided into two 40-acre paddocks, two 30-acre paddocks, and two 10-acre paddocks. In one of the latter would be the house and all other buildings. Their district had an abundant supply of water, so that provision should be made for ample stock supplies and for the growing of summer fodders. Four good horses and a horse for the spring-dray or trap would be required for the working strength of the farm. For the cropping area, he advocated working one each of the 40 and 30 acre paddocks each year. Provided the land was in good heart, he would crop 70 acres each year, half of the area being devoted to wheat and half to oats, sown with a dressing of 1½ cwt. of super to the acre. When the land showed signs of failing, he would divide the land so that it would only be cropped once in every three years. The two 10-acre paddocks could be used for feed for the cows and horses. Referring to fallow, the speaker said he would work the land early in the season to a depth of 2 in. and cultivate it a couple of times before harvest, and then after every rain until the commencement of seeding. Good fallow, good and



clean seed, and plenty of super, were the main essentials to successful farming in that district. Seeding operations should be commenced early, and the oats drilled in before rain, if there were prospects of a late season. After the crop was in and harrowed after the drill, it could be rolled when the plants had made a nice growth. Their district was chiefly a hay-growing one, but if a few acres were reaped for seed, one would have straw for covering stacks, bedding for the horses, and a few bags of wheat for the fowls. Regarding the marketing of the hay crop, he considered that in the majority of years it paid best to stack the sheaves and commence carting to the mills early in the new year, and sell on an average one load per week. The farmer, by doing his own carting, would be able to keep the horses in good condition for the work of seeding, and make the animals pay for their feed. After the crop had been taken off, about 30 hoggets should be purchased and grazed on the stubble. When fattened they could be sold or used as ration sheep for the homestead. The proper management of four or five good cows would very materially assist in financing the supplies from the store for home use. A couple of sows could be kept, and the suckers reared, or store pigs could be purchased and fattened for the market. A flock of 40 or 50 fowls would also be an asset. These should be kept shut up until after midday, when they could be let out for a few hours' exercise before being housed again for the night. In the discussion that followed, Mr. J. Baker did not agree with early fallowing nor with working the fallow twice before harvest. It had been his experience that late fallow was the best, and that the less it was worked the better, so long as the weeds were kept down. He had noticed that the paddock he fallowed last had always returned the best crop during the last few years. Mr. Stanton asked if Mr. Stevens had to hand-feed his cows, as he only allowed 20 acres for grazing. Mr. Stevens stated that it was best to get as much feed off the paddocks that were being cropped as possible, and after the green feed had gone, it would be necessary to give the cows some chaff, bran, lucerne, &c. Mr. Wright asked whether a man could make a living off 80 acres of land in that district? Mr. Stevens said he thought if a man worked his brain as well as his muscles, and had good land, he could make it pay. Mr. Baker thought such a venture would not be profitable, because the cost of implements and machinery to work 80 acres would be as great as would be necessary to work 160 acres.

LYNDOCH, July 21st.—The annual pruning match under the auspices of the Lyndoch Branch of the Agricultural Bureau was held at "Hillside," the property of Messrs. Springbett Brothers, on Friday, July 21st.—Messrs. J. J. Kelly and C. A. Pollitt were the judges, and at the conclusion of the competition heartily congratulated the competitors on the cleanliness of their work. The results of the match were as follows:—Local competitions.—Rod pruning—T. A. Price, 1; R. Bain, 2; L. Harper, 3. Spur pruning—N. G. Zimmermann, 1; E. King, 2; E. Bishop, 3. Open competitions.—Rod pruning—A. Linton, 1; H. Dix, 2; T. A. Price, 3. Spur pruning—E. King, 1; L. Harper, E. Bishop, A. Springbett, and A. Linton tied for the second place.

OWEN, August 4th.—Mr. W. J. Marshman gave an interesting report of the recent Winter School for Farmers that had been held at Roseworthy College. The speaker also replied to numerous questions.

RIVERTON (Women's).—At a recent meeting of the above Branch Mrs. Longbottom tabled a splendid display of yeast cookery, including bread, cakes, &c., and gave an explanation of the making of the various forms of food.

STOCKPORT, July 3rd.—Mr. F. Watts initiated a discussion on the value of combined drills and cultivators. A very keen and spirited meeting resulted, and all members took part in the discussion.

On July 13th a further meeting was held, when the annual report was presented by the Hon. Secretary (Mr. F. Watts), and members again freely discussed the advantages and disadvantages of the combined drill and cultivator.

**FORKE PENINSULA DISTRICT.**

(TO BUTE.)

**BRENTWOOD.**

July 13th.—Present: 19 members and visitors.

**FALLOWING.**—Mr. G. H. Boundy, read a short paper on this subject, favored a mould-board plough for fallowing, because it made a good job of turning the land and burying the grass and rubbish. At the completion of fallowing the harrows should immediately be brought into operation. Fallowing should be started early in July, and finished not later than the end of August; the light soil ploughed to a depth of about 3in., and the red soil to about 4in. The ploughed land should be worked back during October with a spring-tine cultivator, so that it would be left in ridges, and in the event of any summer rains falling the fallow would not set down so hard. Well-worked fallow was the foundation of good clean crops. He suggested starting cultivating about the middle of January to keep the sandy rocket weed down, and about the middle of March a spring-tine cultivator should be used to keep the land clean for seeding. The possibilities of securing better returns would be increased by keeping the land worked clean in the summer time. If time was available after harvest it was a good plan to fallow the stubble land and keep the weeds and other plants fed off with sheep. In the discussion that followed Mr. B. Anderson agreed with the use of the spring cultivator, because it shook the fine soil down and brought the rough to the surface. Mr. D. B. Longbottom strongly advocated plenty of harrowing. Mr. A. L. Vanstone concurred in regard to fairly deep fallowing. Shallow ploughing caused trouble when the stubble land had to be prepared for the next barley crop. He favored plenty of harrowing diagonally, and then crossing again.

**NEPTUNE**



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Mr. C. H. Boundy had obtained excellent results from fallowing directly after harvest; the land so treated being very easily worked in the following August. Summer fallowing, especially in the heavier class of land, was comparatively easy compared with that done after seeding, and anyone giving it a trial would be well satisfied with the results.

#### KILKERRAN.

July 6th.—Present: seven members.

TIME AND LABOR SAVING HINTS FOR THE FARM.—Mr. J. A. Allan, who contributed a paper dealing with this subject, first referred to the time and labor that would be saved on the farm if a supply of water was laid on to the homestead, stables, fowlyard, piggeries, and cowyards. Those farmers who used the cask method of pickling wheat would find that the erection of a draining table, wide enough to carry two bags, and a bagger attachment, would save a considerable amount of time, because two bags could be draining on the table, whilst one was being pickled in the cask. The blacksmith's shop, he considered, should have a place on every farm, and a few pounds expended in the purchase of tools would be money well spent. The annual report was presented by the Hon. Secretary (Mr. B. A. Koch), and the officers were elected for the forthcoming term.

#### WESTERN DISTRICT.

##### KOONIBBA.

June 9th.—Present: six members and visitors.

BETTER METHODS OF FARMING.—In the course of a paper dealing with this subject Mr. H. Braunack said it was generally recognised that the only practicable way of conserving the soil moisture was by means of fallowing, while to keep the weeds in check the use of cultivating implements, harrows, and sheep were most necessary. A farmer with a holding of 1,000 acres should crop 300 acres, devote a similar area to fallow, and use the remaining 400 acres for grazing. Such a plan would enable the farmer to carry, without any fear of overstocking, 150 sheep, for they could be used to keep the weeds on the fallow in check, and would also have 400 acres over which to graze. Again the sheep played an important part in the work of the farm in assisting in the consolidation of the seed bed of the fallow, and they also provided the household with mutton and brought in revenue from their wool. The speaker was of the opinion that too many idle stock were kept on the majority of farms; twelve horses, he considered, would be ample to work a farm on the lines that had been suggested.

##### McLACHLAN.

June 10th.—Present: 10 members.

CONSERVATION OF FODDER.—The following paper, under the heading of "Preparation for Dry Periods," was read by Mr. Roe:—"Australia is known for its cycles of dry years, when the stock in many districts suffer from absence of natural feed. In my opinion farmers in newly settled districts do not make sufficient provision for the time of shortage. Rainfall on Eyre Peninsula varies from 20in. to 25in. near Port Lincoln, to about 10in. on the far West Coast. As the average of our district falls about midway between these extremes, it is an easy matter to grow hay or green stuff to lay in store, for the future, either as hay or ensilage. I think the sowing of 50 acres of Cape barley, say in April, and fencing the crop off for grazing a splendid idea. During the 1914 drought, at Cummins, when horse feed was very scarce, I remember an instance where 60 acres of Cape barley were sown which kept 20 horses and four cows going right up to harvest time. Cape barley, being hardy, does with very little moisture when once rooted, and after being fed off shoots again and grows rapidly and forms an ideal green fodder. Oats and rye treated in this manner give good results. Where oats and other hay crops grow as easily as they do in these districts, the problem of securing enough suitable dry fodder should not prove a very difficult matter for the farmer to overcome. It is most essential that the stacks be kept free from vermin, and this can only be accomplished by mouse-proofing. When building the stack I am in favor of sprinkling each layer with brine. This is inexpensive, as coarse salt of good quality can be

obtained locally. When the stack is finished I advocate thatching with sheaved straw. While the seasons are good, a few days' work will make a large straw stack, which, if treated liberally with brine, makes a good stand-by in either wet or dry seasons. Heaps of cocky chaff should not be despised, but carted into a corner of the paddock, covered with plenty of straw, and fenced off."

#### PYGGERY.

July 3rd.

**MANAGEMENT OF THE TEAM.**—In the course of a paper under the heading "Working the Team," Mr. F. Kammerman said where the horses were called upon to do heavy work, they should be groomed before being harnessed in the morning. The collar should fit the shoulders fairly tightly, and an old super bag, cut to the desired length, folded down the middle, and placed under the collar with the seams turned forward, could often be used with advantage. He favored the "abreast" system of working the team, because it brought the horses closer to their work, and the teamster was able to see that each animal did its fair share of the work. In the discussion that followed, Mr. Woodrup thought it better to use a clean bag under the collar. Mr. Symonds spoke in favor of leather-lined collars, and considered a double team an advantage. Mr. Edmonds emphasized the need for thorough grooming, and was of the opinion that if the horses were kept in good condition they would not be so liable to sore shoulders.

#### ROBERTS AND VERRAN.

July 6th.—Present: six members and two visitors.

**FALLOWING.**—Mr. H. Simmons read a paper on this subject, and in the discussion that followed Mr. B. Evans stated that most of the land in their district was too rough at present to enable them to use the spring-tooth cultivator. He favored the ordinary share cultivator. Harrowing was necessary to ensure a good seed bed. Stumps should be pulled out at fallowing, as one then had more time to devote to picking. Mr. A. Comley said that he had found it a good plan to leave the surface of the lighter soil in a rough state. He favored the use of the harrows on the heavier soils, and thought their district too rough to use the spring-tooth cultivator. The fallow should be worked early and whilst it was in a wet condition. Mr. M. Masters agreed that harrowing was necessary to make a firm seed bed. Mr. H. C. Videon thought that 4in. was rather deep for fallowing. He advised the use of the harrows and spring-tooth cultivator wherever possible for subsequent working. In reply, Mr. Simmons said the harrows were essential to the proper working of the fallow. He maintained that the spring-tooth cultivator was an excellent implement for killing the weeds if the plants were not allowed to grow too large.

#### STREAKY BAY.

July 8th.

**HINTS FOR IMPROVEMENT IN OUR FARMING OPERATIONS.**—Mr. G. V. Lindquist, who contributed a paper on this subject, was of the opinion that the best method of putting in new land, provided it had carried a good burn, was to simply drill in the seed and run the harrows over the land. When the land had been worked for a number of years the weeds had to be destroyed before it would carry a payable crop of wheat, and in such times as those he believed that the farm could not be worked successfully without the aid of sheep. For the proper management of a farm in the district of Streaky Bay, the writer considered that it was first necessary to lay out the farm properly, and provide, if possible, for a water supply in every paddock. In spite of the fact that modern machinery was an expensive item, he firmly believed that it did not pay to work the land with old and out-of-date implements. Most farmers, he thought, cultivated the land too deeply; a depth of from 1½in. to 2in. was quite sufficient for their district. The aim of the farmer should be to make a good seed bed—a loose surface soil of 1½in. to 2in., with a solid bottom underneath. He would apply from 75lbs. to 1cwt. of super to the acre. Such a dressing would not only give an increased yield, but would also assist in building up the fertility of the soil. Referring to the sowing of the seed the speaker believed that there were two reasons why, in so many instances, such a poor germination was received, first because of the poor condition of the seed bed, and secondly because many of the grains were damaged during harvesting operations. Wheat that was gathered by the harvester was frequently damaged,

## THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA

## THIRTY-THIRD ANNUAL CONGRESS

TO BE HELD IN THE

VICTORIA HALL, GAWLER PLACE, ADELAIDE

ON SEPTEMBER 11th, 12th, AND 13th, 1922.

CHAIRMAN—MR. W. S. KELLY (Chairman Advisory Board of Agriculture).

## MONDAY, SEPTEMBER 11th—

OPENING SESSION, 8 p.m.

OPENING ADDRESS—

MINISTER OF AGRICULTURE (Hon. T. Pascoe, M.L.C.)

Other Speakers.

CHAIRMAN (Mr W. S. Kelly).

## TUESDAY, SEPTEMBER 12th—

MORNING SESSION, 9.30 till 12 noon.

PAPER .. .. " Boys' and Girls' Clubs in Canada " .. Mr. J. C. JENNER  
(Naracoorte Branch)ADDRESS .. " Herd Testing Societies " THE DIRECTOR OF AGRICULTURE  
(Prof. Arthur J. Perkins)

PAPER .. .. To be Selected .. ..

AFTERNOON SESSION, 2.15.

PAPER .. .. " Second Cereal Crop " .. Mr. W. A. CLARK  
(Tarlee Branch)ADDRESS .. " The Aim of the Dairy Improvement Act " Mr. W. S. KELLY  
(Chairman Advisory Board)

PAPER .. .. To be Selected .. ..

EVENING SESSION, 7.45.

ADDRESS .. { (Illustrated with lantern views)—" Overland from Adelaide to Darwin " } Capt. A. S. WHITE, C.M.B.O.U.  
(Vice-Chairman Advisory Board)

## WEDNESDAY, SEPTEMBER 13th—

MORNING SESSION, 9.30.

PAPER .. ..

SHORT ADDRESSES .. " The Lucerne Flea " .. Mr. A. M. LE  
(Museum Entomologist)" The Dried Fruit Moth " Mr. GEO. QUINN  
(Horticultural Instructor)

AFTERNOON SESSION, 2.15.

FREE PARLIAMENT—

**FREE PARLIAMENT RESOLUTIONS.**

Branch.	Resolutions.
1. PETINA . . . . .	"That a delegate who travels to Congress by means of a private car be made an allowance of a sum equal to the rail, steamer, or coach fare from his starting place."
2. ELBOW HILL . . . . .	"That every farmer be allowed to keep one dog free of registration."
3. MOUNT BARKER . . . . .	"That nominations be forwarded by the various Bureaux, the Department of Agriculture be requested to compile a list of persons competent to act as judges at shows and to make such lists available to the secretaries of agricultural shows."
4. LONE GUM . . . . .	"That this Congress is impressed with the need of steps being taken to combat the moth which attacks dried fruit."
5. LONE GUM . . . . .	"That this Congress recommends the compulsory registration of nurserymen."
6. RENMARK . . . . .	"This Congress urges on the Government the need for preserving timber in the bends of the River Murray."
7. SHOAL BAY . . . . .	"That the Government publish official overseas quotations of farmers' produce and requirements."
8. SHOAL BAY . . . . .	"That the Government be asked to amend the Width of Tires Act to reduce the weight to be carried from 9cwts. to 8cwts. per inch of tire during the dry months of the year, and to reduce the weight from 9cwts. to 6cwts. during the wet months."
9. VIRGINIA . . . . .	"That this Congress urges on the Government the necessity for introducing legislation to control the sale and distribution of farm and garden seeds."
10. VIRGINIA . . . . .	"That, in the opinion of this Branch, immediate steps are necessary to cope with the lucerne flea with a view to its extermination."
11. YACKA . . . . .	"Delays in transporting stock on the railways."
12. PORT ELLIOT . . . . .	"That this Congress urges the adoption of the practice of selling fat cattle by live weight."
13. YADNARIE . . . . .	"That the import duty on sulphur be reduced."
14. SMOKY BAY . . . . .	"That the Government be asked to supply to settlers galvanized iron under similar conditions to those under which it provides fencing material under the provisions of the Fencing Act."
15. POMPOOTA . . . . .	"That this Congress urge on the Government the necessity for opening up an export market for pigs, and that every encouragement be given the pig industry."



and he believed it would pay to harvest the wheat intended for seeding with an ordinary reaper. Stock also played an important part in the success of the holding, and the farmer should at all times endeavor to keep good animals, and at the same time aim at improving his herds and flocks. Conservation of fodder—The average farmer usually kept on hand just sufficient fodder to put in his crop, and in the event of a drought following, the farmer was confronted with a very serious position. If the farmer would only conserve a sufficient quantity of hay, or even straw, each year, he would have no need to worry about a drought. For fencing, the speaker suggested the erection of a fence with posts 10 yards apart and iron droppers between.

**LAMBS FROM MATING TO MARKING.**—A member in the course of a paper dealing with this subject said he was in favor of a late lambing for the district of Streaky Bay. The lambs should be dropped about the middle of June, for at that time the ewes were likely to have plenty of milk and be able to graze on good green feed. Late lambs would not cut so much wool as those dropped early in the season, but the ewe would undoubtedly be in better condition and cut a more valuable fleece. As the ewes required careful attention during lambing, he was not in favor of extending the lambing over a longer period than seven weeks. To arrange that, he recommended the use of one ram to each 50 or 60 ewes, and mating the rams with the ewes about the middle of January. A good plan was to put half of the rams in first and then after an interval of 12 or 14 days the other rams should be placed with the flock. Seven weeks from the date of placing the first rams with the ewes, all the rams should be taken out of the flock. The first lambs could be expected 148 days from the date that the first rams had been placed with the ewes. A well sheltered paddock should be selected for the lambing ewes, and it was also important to make provision for a liberal supply of good drinking water. During the course of the lambing season, an inspection should be made of the flock to see if any ewes required assistance. If possible the ewes should not be moved from the lambing paddock until the lambs were strong enough to follow their mothers. The lambs could be safely tailed and ear-marked after they were a few days old, but, as a general practice, he was in favor of doing that work, weather permitting, when the majority of the lambs were six weeks old.

#### TALIA.

July 22nd.—Present: 9 members and visitors.

**FALLOWING.**—A short paper on this subject was read by Mr. A. L. Robertson, in the course of which he said every farmer should make a practice of fallowing an area of land for the coming crop, as that was the only practicable way of conserving a considerable amount of moisture. Fallowing was also essential in order to obtain maximum returns from wheat or other cereal crops. In preparing the land for the plough, all old straw and tufts of grass should be burned before the commencement of winter, as the spores of the takeall fungus developed on rubbish ploughed under. Fallowing should be commenced as soon after seeding as possible, preferably with a share plough with well shaped mouldboards, to turn the soil completely over. Three inches to 4in. he considered was deep enough for working the light soils of their district. Where there was no danger of the soil drifting the harrows should follow the plough. If weeds appeared during the summer months, the sheep should be grazed on the fallow to keep the plants in check. After the first rains the fallow should be given a shallow cultivation to kill any weeds that had made a fresh growth. The speaker held the opinion that for their district only a few cultivations were necessary, but it was important that these should be given at the right time. A long debate also took place on the advisability of telephone communication for isolated districts.

**BUTLER, July 10th.**—The meeting took the form of a discussion on the subject "Necessity for Economy and to what extent it would pay," in which Messrs. A. Piltzner, D. Butler, and C. Jericho, too part. The officers were also elected for the forthcoming year and the annual report was presented by the Hon. Secretary (Mr. A. J. Parsons).

**KOONIBBA, July 7th.**—The Rev. Juers, delegate to the 1921 Eyre Peninsula Conference of Branches of the Agricultural Bureau, gave a very interesting report of the proceedings of that gathering and of the work that was being carried on at the Minnipa Experimental Farm.

**SMOKY BAY, July 8th.**—Mr. H. W. Tremaine read a paper, "Galvanized Iron for Settlers," and a keen discussion followed. The report of the work performed by the Branch during the past year was presented by the Hon. Secretary (Mr. Geo. O. Lovelock), and the officers were elected for the ensuing term.

### EASTERN DISTRICT

(EAST OF MOUNT LOFTY RANGES).

**MONARTO SOUTH** (Average annual rainfall, 14in. to 15in.).

July 8th.—Present: 13 members.

**TANK BUILDING.**—The monthly meeting was held at Messrs. A. & B. Schenscher's residence, when the Hon. Secretary (Mr. C. F. Altmann) read the following paper:—"In this district, with its few natural wells, we are compelled to conserve surface water during the winter for summer use by building dams and tanks. The dam is undoubtedly the cheaper, and although a lot of water evaporates, the dam can be built big enough to last a fair time. A dam to hold properly must have a good clay bottom, and as that is not always to be found at the catchment site, it becomes necessary to adopt the more expensive method and build tanks. When building an underground tank make the excavation sufficiently large to allow at least 6in. of sand to be rammed between the wall and the soil. The sand will not expand or shrink when wet. I prefer the single brick wall, built with cement mortar. Mix about three and a half to four parts of good sharp sand to one part

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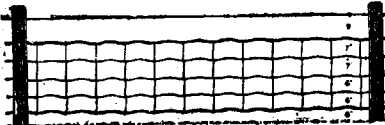


Fig. 7.—5-line Special Cyclone Spring Coil Fence.

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of cement. Before laying the bricks in warm weather, soak them in water until no more bubbles rise, then let them drain off for about an hour. When cold and wet they will remain damp for a long time before they need resoaking. A circular tank is to be preferred, and it is not so likely to crack as a square one. After the walls and floor are finished plaster with cement mortar of about two parts of sand to one of cement. After the plaster has set for an hour or two, paint liberally with pure cement, to fill up the pores. When building walls of stone and lime I would place sand between the soil and the wall, and use similar plaster as for a brick tank, except that all mortar showing on the inside of the wall should first be picked out as far into the wall as possible, and the wall again plastered up with cement. In this way a good job can be made of a stone wall. I think if labor is taken into consideration, the brick tank is the cheaper, and besides, one does not require so large an excavation. When arranging to catch water from roofs I would build an overground tank. Dig the surface soil away about 9in. to 12in. deep for the foundations. Fill this up with concrete or wall it up with large, flat stones at the bottom, to a height of about 12in. above the surface. Then level it off and lay the brick bottom over, bedding the bricks well in cement. I do not recommend an overground tank to be more than 6ft. or 7ft. from the bottom. When the walls are finished, and have been allowed to set for a day or two, place pig netting tightly around the outside. Then cement the outside of the tank. The cement will set in between the meshes of the netting, and prevent it from stretching. Over a small tank it is not essential to build a roof, but on a large tank it is, because the wind will ruffle the water, and cause undue pressure on the walls, which often leads to disastrous results."

#### YOUNGHUSBAND.

July 6th.—Present: six members.

OVERSTOCKING.—Mr. S. J. Brinkley, who read a paper on this subject, said in those mallee districts where the rainfall was light and where stock played an important part in the working of the holding it was very necessary that the land should not be overtaxed by carrying large numbers of stock. A man having a property of 1,000 acres should, he considered, crop 300 acres, fallow 300 acres, and use the balance of the land for grazing or timber. Twelve horses would be necessary to successfully work such a holding, and these, with the dairy cows, would use most of the natural pasture, which at best was only short-lived. In many cases not sufficient provision was made to tide the stock over dry and unfavorable conditions, and seeing that no farm could be properly managed without the aid of stock, the speaker contended that farmers should more generally adopt the practice of erecting stacks of reserve fodder.

BERRI, July 10th.—On Tuesday a very pleasant social evening was spent in the institute. Certificates and prizes won at the recent pruning competitions were handed over, and Mr. C. G. Savage, in a very thoughtful address, pointed out the advantages of becoming an active member of the Agricultural Bureau.

MURRAY BRIDGE.—On May 16th the Dairy Expert (Mr. P. H. Suter) attended the meeting and delivered an address, "Dairying on the River." A further meeting was held on June 20th, when Mr. C. Leishmann (Orchard Instructor and Inspector) delivered a lecture in which he dealt with the subject, "Growing Better Fruit." Mr. C. H. Beaumont (Orchard Instructor and Inspector) gave an address, "Picking, Packing, and Grading Fruit" on July 18th.

PARILLA WELL, August 18th.—The Instructor for Mallee Lands (Mr. C. P. Hodge) attended the meeting and delivered an address, "General Farming Practices in the Mallee."

PARUNA, July 7th.—The Instructor for Mallee Lands (Mr. C. P. Hodge) attended the meeting and delivered a lecture, "Farming Practices in the Mallee." Mr. F. C. Richards, of the Department of Agriculture, was also present and gave an address, "The Work of the Agricultural Bureau."

RENMARK, July 6th.—An interesting evening was spent in discussing and reviewing the outstanding features of the past season.

WYNARKA, June 10th.—Mr. Williams read a paper, "Crop Rotations," and an interesting discussion followed.

At a further meeting held on July 15th a paper dealing with the subject, "Rabbit Destruction," was contributed by Mr. Finnis, which resulted in a free and interesting discussion.

### SOUTH AND HILLS DISTRICT.

BLACKWOOD (Average annual rainfall, 27in. to 29in.).

July 17th.—Present: 11 members.

APPLE PACKING.—Mr. C. G. Grasby (Assistant Orchardist, Government Orchard, Blackwood) read the following paper:—"Now that the apple-growing industry is increasing so rapidly, the time is approaching when more attention must be paid to methods of packing and marketing. During the previous years it will have been noticed that there has been an enormous amount of inferior and waste fruit placed on the English markets. Australia is in the initial stages of fruit production, and cannot afford slipshod methods. The lack of system and co-operation among growers is most noticeable. An up-to-date packing shed is an essential building on an orchard. It should be well lighted, properly ventilated and cool, with a platform on one side to facilitate unloading and loading operations. With such a shed any fruit picked in the heat of the day will cool rapidly, and after the packing season the shed could be used as a storeroom, &c. Why do we pack? Is it necessary to go to all this trouble to export fruit? No doubt there are many people who would ask such questions, and to them the following answers

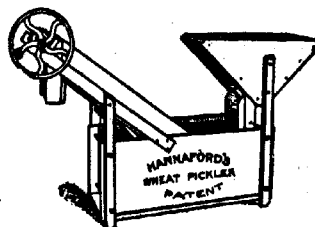
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could be given:—To ensure safe handling and transportation, and to secure a uniform sample throughout. By wrapping we prevent a perished fruit from affecting its immediate neighbors. Again, the stalks cannot injure other fruits on account of their stalks resting immediately between the fruits below them. Just so much space is filled as will make a package of fruit neither too tight nor too loose, providing the fruit is correctly packed. The foundation of good packing is in the grading. There are several methods of grading practised throughout Australia, the most general being that of sight grading. In Tasmania and numerous large orchards in other States machine graders are used with good results, and there is no doubt that they save time and labor. Packers who grade by sight, unless they are experts, are very apt to get away from uniformity. In small orchards, where packers depend on sight grading, they could be helped considerably by the pickers, who should rigidly adhere to rules and bear in mind the maximum and minimum of grades, and keep strictly within those margins. Then, again, it is commonly known that some, when grading, grade to fractions, while others believe that this system is apt to be taken advantage of, inasmuch that the benefit of the doubt referring to the size goes too often to the larger, thereby reducing the genuineness of the grade. In so far as cases are concerned, owing to pine woods being scarce and expensive, we have been using hardwoods, the most common being scarce and expensive, we have been using hardwoods, the most common being stringybark. Although this wood makes a strong case it has not the desired resiliency of the pine. Again, it has a tendency to warp badly unless first cut and seasoned. The internal measurements of the case are 18in. long by 8½in. wide by 14½in. deep. There is plenty of room for improvement in the varieties and quality of fruit which is being packed at the present time, and it is absolutely necessary that a system be adopted whereby only a uniform sample of fruit would be exported. I would go so far as to suggest that a competent inspector be appointed to visit each packing establishment in the interest of the export trade to examine the fruit being packed, give advice and instruction where necessary, and give lectures at various centres. This man should be provided with the means of travelling from one place to another without any loss of time. Our fruit industry is developing with rapid strides, and with the increase of the industry so will competition increase. Foreign markets for our products are necessary, we certainly have the English markets—which could be improved—but we want others, and to get them our products must be good. Let us start in the right place and advertise our produce by only sending first class fruits. It is necessary, therefore, to study the variety, the quality, and the keeping qualities of the fruit. For instance, apples from young trees will not keep for any length of time, and it is a well-known fact that 3in. and even 2½in. fruits will go mealy in a very short time. It is all very well to think that the fruit will be sold before it has time to perish so that we will not be the losers, but eventually that is what will happen. The procedure for packing is as follows:—A strong, sturdy bench of a convenient height should be obtained. Place the bench in front of or near a window, as light is most essential, raise the back of the bench an inch or two to give it a convenient slope, and then place the cases and paper in convenient positions. Owing to our fruit having to travel a long distance, a thin layer of woodwool should be placed over the bottom of the case. Needless to say the fruit is wrapped, but in so doing do not twist the paper in a hard knot over the stalks, in fact, that should be avoided. Merely fold or press the loose corners over the stalk. Of course, all apples are packed with their stems down, but there is room for improvement in this method. For example, I know of the case of an orchardist taking great care in packing his fruit under the present system. Later, when carting, the cases were loaded in the vehicle on their side. An inspection of the consignment showed severe bruising found to be due to this method of transporting the cases on the side. The style adopted both in Canada and America differ from ours. Briefly, the system is to place the apples on their cheeks, whereas we pack with the stalks down. To ascertain whether the different shaped varieties would give varying results, I packed three distinct varieties—long, round, and flat apples, namely, Cleopatra, Jonathan, and Dunn's Seedling. The cases used were the standard bushel. The packs used were as follows:—2-1, 2-2, and 3-2, the grades being 3½in., 3in., 2½in., and 2½in. The 2-1 pack.

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From Mr. W. G. Christians, St. James, Vict.:—

"I must tell you that our engine is working beautifully. The more we work it the better we like it. We have just finished ploughing 60-acre paddock at a cost of 1s. 3d. per acre—in our eyes, something to be proud of."

From Mr. H. G. Tarran, Laverton, Vict.:—

"I have just ploughed 115 acres in 10½ days from pulling into paddock until pulling out (Sunday excepted), the tractor pulling nine furrows, cutting 6ft. wide, 4in. deep, at a cost of £6 10s. for crude oil, 10s. 6d. kero., 15s. benzine, 23s. cylinder oil, 5s. lubricating oil—total, £9 2s. 6d. No breakages, no time lost except filling tanks, &c., no spark plug troubles, not even having to clean same. The engine has cut some thousands of tons of chaff for market, and ploughed several hundred acres, as well as cultivating and other jobs, doing practically all its work on crude oil since I bought it some years ago. It did this job without any special preparation, being taken straight off cutter and hitched on to plough."

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(WRITE AT ONCE FOR FULL PARTICULARS TO—

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—The procedure in placing the apples in the case varies according to the pack. In the 2-1 pack the first apple is placed in the left-hand corner, the second in the right-hand corner, and the third placed firmly in between Nos. 1 and 2 until the layer is completed. Then to start the second layer the first apple is placed over the space caused by Nos. 1-3 and 2, then the second on the left and the third on the right, and so on. The results are as follows:—The 2-1 pack.—2-1 pack, 6 x 6, contains 6 layers (3 x 16, 3 x 17)=99 fruits, 3in. Cleopatras; 2-1 pack, 6 x 5, contains 6 layers (3 x 16, 3 x 17)=99 fruits, 3in. Jonathans; 2-1 pack, 6 x 6, contains 6 layers, each 18=108 fruits, 3in. Dunn's Seedling; 2-1 pack, 5 x 5, contains 5 layers, each 15=75 fruits, 3½in. Dunn's Seedling. The 2-2 pack.—Apples, 3in., and down to 2½in., can be used in this pack. The first apple is placed in the left-hand corner of the case, the second apple half-way between No. 1 and the right-hand corner, No. 3 is placed between Nos. 1 and 2 and No. 4 is placed between No. 2 and the side of the case, and so on. To start the second layer the first apple rests between Nos. 2 and 4, the second rests between Nos. 1-3, and 2, and so on. The 2-2 pack.—2-2 pack, 4 x 5, contains 7 layers, each 18 fruits=126 fruits, 2½in. Cleopatras; 2-2 pack, 5 x 5, contains 7 layers, each 20 fruits=140 fruits; 2½ Jonathans; 2-2 pack, 5 x 5, contains 7 layers, each 20 fruits=140 fruits, 2½in. Dunn's Seedling; 2-2 pack, 4 x 4, contains 6 layers, each 16 fruits=96 fruits, 3in. Cleopatras; 2-2 pack, 4 x 4, contains 6 layers, each 16 fruits=96 fruits, 3in. Dunn's Seedling; 2-2 pack, 6 x 5, contains 7 layers, each 22 fruits=154 fruits, 2½in. Cleopatras; 2-2 pack, 6 x 7, contains 7 layers, each 26 fruits=182 fruits, 2½in. Jonathans. The 3-2 pack.—2½in. and 2½in. fruits can be used effectively in this pack, the procedure being:—Place Nos. 1 and 2 in each corner nearest the packer, No. 3 is then placed between Nos. 1 and 2 and Nos. 4 and 5 between 1 and 3 and 3 and 2 respectively, and so on. The second layer Nos. 1 and 2 rests above Nos. 1-4 and 3 and 3-5 and 2 respectively, and so on. The 3-2 pack.—3-2 pack, 6 x 5, contains 7 layers (4 x 28, 3 x 27)=193 fruits, 2½in. Cleopatras; 3-2 pack, 6 x 5, contains 8 layers (4 x 28, 4 x 27)=220 fruits, 2½in. Jonathans; 3-2 pack, 4 x 5, contains 9 layers, each 25=225 fruits, 2½in. Dunn's Seedling; 3-2 pack, 4 x 5, contains 7 layers (4 x 23, 4 x 22)=158 fruits, 2½in. Cleopatras; 3-2 pack, 4 x 5 contains 8 layers (4 x 22, 4 x 23)=180 fruits, 2½in. Jonathans; 3-2 pack, 4 x 5, contains 8 layers, each 4 x 23, 4 x 22=180 fruits, 2½in. Dunn's Seedling. In looking through these packs it will seem strange that although three distinct types of apples were used, there is no variation in the numbers of layers to the case in the 2-1 and 2-2 packs, except in the 2-2 pack, where 3in. apples were used; but in looking through the 3-2 pack it will be found that there is a variation, especially where 2½in. apples were used. There you will find 7, 8, and 9 layers, while in the 2½in. apples you find 7, 8, and 8 layers. Where 2½in. apples were used the table varies considerably; the 2½in. Cleopatras give 7 layers, 4 x 28, 3 x 27, which gives 193 fruits. The 2½in. Jonathans give 8 layers, 4 x 28, 4 x 27= 220 fruits. The Dunn's Seedling give 9 layers, each 25 fruits, making a total of 225. Here the results given by the various shapes is distinctly shown. It will be found that in each of the packs diagonal lines are formed, caused by the apples resting cheek to cheek. From this method of packing the diagonal pack is derived. Consideration and careful handling must be given to the process of nailing down, for untold damage is done through the want of better methods. Owing to the cases bulging at the bottom, two pieces of wood, 1in. thick, should be placed on the floor 16in. apart, where each case should be put before nailing.

GUMERACHA (Average annual rainfall, 33.30in.).

June 5th.—Present: 8 members.

CARE OF FARM MACHINERY.—Mr. A. W. Cornish, who contributed a short paper dealing with this subject, stated that the high cost of requirements made it necessary for the farmer to take every care of the machines, in order that they should be kept in serviceable order for as many years as possible. The best implements should be purchased, and these should be regularly and systematically oiled with the best lubricating oil, especially did that apply to those bearings

of the machines that worked at a high speed. Bearings should be properly adjusted, and all nuts that were shaken from the machine should be immediately replaced. It was a good plan to carry a few spare nuts with the machine and to keep all nuts screwed up tightly. At the end of the work for the season the machines should be placed under cover, and on rainy days they could be overhauled, ready for next year's work. When working the binder he considered it a good plan to go over the land and remove any large stones or stumps, so that the machine would not be injured. Any machine with wooden wheels should be cleaned and given a coat of linseed oil or thin paint, and all vans and trollies should be painted at least once every two years.

#### KANGARILLA.

July 7th.—Present: 17 members and two visitors.

**ARTIFICIAL INCUBATION AND THE BEARING OF CHICKS.**—Mr. E. Butler read the following paper:—"The incubation and the rearing of chicks is among the most important subjects in poultry farming. No matter how a man may feed his poultry, or how good his houses may be, if his chicks are weak and puny, his work will result in utter failure. The selection of a good incubator is

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all important, as the success or failure of artificial incubation is largely dependent on the incubator used. There are two different kinds of incubators on the market, hot air and hot water. I have used both with success for some years. The hot water machine keeps a fairly steady temperature, and should the lamp happen to go out, and remain so for some time, the temperature in the egg drawer will take some time to diminish. The hot air machines have no tank, and are far more susceptible to sudden changes of temperature. The incubator should be set up and operated according to the directions, as each maker of incubators knows how his machines should be worked. In buying an incubator for the first time, do not fill it with eggs and start it straight away. Get to understand the way in which it should be operated. First fill the lamp and then light it, and see that the wick is clean and burning with a clear flame. Place the thermometer where instructed, and gradually get the heat up to the required temperature. This will need a little attention, as the regulator may have to be adjusted from time to time. Let the machine run for a few days until you have thoroughly mastered the working of it, and then place the eggs in the egg drawer. The selection of eggs is all important, and only those of full size should be used. On the commercial plants the size of eggs is what the farmer wants. If he uses eggs averaging 24ozs. to the dozen, saved from selected stock, he then knows that his results in egg production, as regards size, will be to his entire satisfaction. Eggs that are in any way deformed should not be used for hatching. Another advantage of having eggs of uniform size is that they can all get their fair share of correct heat. See that the thermometer is a good one, and registers the degrees of temperature correctly. This can be tested alongside of another one in a basin of warm water. The thermometer is an important factor in hatching, and should it be faulty, the operator may have his work result in complete failure, and so give up in despair. After placing the eggs in the machine, and having set the thermometer in position, the door is closed and he need not worry if the temperature takes a little while to come up to what he requires. The eggs are cold, and if they are gradually brought to the necessary heat, so much the better. I usually allow 24 hours for heating. Care must be taken with the adjusting screw, and it will need a little attention to get into correct position. For the first week of the hatch I usually run the temperature at 102deg. to 103deg., the second week 103deg., and the last week up to 104deg. It is necessary to keep the temperature well up when the chicks are hatching. No hard and fast rule can be set down, for the person in charge must be guided entirely by circumstances and his own judgment. Should the nights be cold, it is advisable to raise the temperature a shade, up to 1deg. if necessary, while at the finish of the season, should the day be hot, a slight lowering will be found necessary. A correct system of turning the eggs night and morning should be observed. Some makers of incubators supply special trays for this purpose, but by using the hands one soon gets accustomed to the work, and can quickly get through it. With the turning comes airing. Fresh air will do no harm, and it is necessary that the eggs should be allowed to pass off all impurities by correctly airing them. The change from heat to cold when this operation is going on causes the shells to become brittle and so help the chicks in breaking through. For the first week I do not leave the eggs out very long, but gradually lengthen the time for airing as the chicks develop, giving them up to 20 or 30 minutes the third week, according to weather conditions. Moisture must not be overlooked, and I favor this for the first and third week. The operator of an incubator must use his own judgment in this respect. During the latter part of the season, when things are perhaps hot and dry, more moisture will be needed than in the beginning. On the 19th day some of the chicks may begin to chip the eggs; stop turning, and see that the moisture trays have enough lukewarm water to carry the hatch through. Close the machine right up and do not open again until the hatch is well over. Opening the doors to see the chicks allows a rush of cold air, and this does a lot of harm to the young birds. When quite dry the chicks may be removed to the brooder, which should be in readiness to receive them. The incubator should be

thoroughly disinfected and all fluff and droppings thoroughly cleaned out. The machine is then ready for further use. The rearing of chicks in large numbers is at times a difficult matter, and much care and attention should be devoted to this important branch of the poultry keeper's work. The system and manner of brooding goes a long way to the success or failure of rearing the chicks that have been hatched. In taking the work away from Nature, the farmer must supply what Nature intended these young chicks to have, and the first need is warmth. When the chicks are in the machines drying off in the chick drawer, the temperature is somewhere near 60deg. The brooder to which these chicks are to go should be clean and dry, and sharp sand placed on the bottom, and when the temperature in the brooder is about 97deg. it will be found warm enough. The chicks will not need food until they are 30 or 40 hours old, and there is no need to be in a hurry to feed them. Nature has provided them with food in the yolk of the egg. The chicks soon become accustomed to their new quarters, and the poultry keeper can tell at a glance if they are too hot or too cold. They are the best thermometer for registering the heat in the brooders, and when they look the picture of contentment, and not crowded, or panting, the poultry keeper knows that the temperature is right. When giving the chicks their first feed, give them good mixed grain, such as wheat, rolled oats, peas, and maize, crushed to the necessary size. Water should always be placed before them, so that they can get at it to drink: not so that they can get into it. A strong healthy chick soon learns to feed, and when the grain is scattered in some light litter, such as chaff, the chicks are soon busy scratching, and looking for their food. The chicks are kept busy and warm with this exercise, which promotes digestion and helps the chicks

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in other ways. Great care must be taken not to over feed. It is mistaken kindness, and the evening meal should be the biggest. For the first two weeks they should have a little grain thrown to them about every two hours, and a hopper containing dry mash will be found beneficial. The dry mash consists of bran, pollard, oatmeal, a small percentage of meat meal, and the usual grits. After the first fortnight the meals can be cut down to five or six per day, and the temperature of the brooders can be slightly reduced. By this time the chicks will have grown considerably and need more room. A brooder that will hold 50 day-old chicks will be found too small to hold them now, and so it is necessary to take out about half and put in another unit. One of the greatest mistakes in brooding chicks is overcrowding, and the person who does this will find danger ahead. When a month old, a little wet mash should be fed, and this line of feeding followed, gradually cutting out the grain in the morning and giving a full feed of mash. At this stage the early chicks will require little heat, it will depend largely on the conditions of the weather, but it may be found necessary to keep the lamp going for some time. At five or six weeks old the sexes may be picked out;—I am speaking now of White Leghorns—and it is advisable to separate the sexes. They will do better thus separated, and the young cockerels may be treated a little differently in feeding. When old enough to do without artificial heat, the chicks can be drafted from the brooder house to fresh quarters. If the runs have been planted with green feed, so much the better. Green feed, and plenty of it, is necessary for young growing stock. With the cold brooders ventilation is wanted, and a box can be used for this purpose, with dry sand on the floor for the chicks to camp on. Cleanliness is essential, and all brooders should be cleaned each day and a fresh supply of sand put down. Three meals a day will be found sufficient at this stage, two of them wet mash, and the evening meal, grain. The runs of the sheds should be kept clean, and by forking over a portion the loose earth will give employment to the chicks. The chicks will take a little while to find the perches, and until they do it is well to keep them in their box at night. Chicks should be kept clear of all cold winds, as this will cause great trouble, especially during the first few weeks of their lives, and a chilled chick is far better killed. In a flock, there will be found a certain percentage of weaklings, and these should be killed as soon as they can be picked out. It is a case of 'the survival of the fittest.' We see this in Nature, and it makes a difference to the whole flock. By culling, and culling hard, we are left with the healthy, strong, and vigorous chick, which will ultimately develop into a hardy fowl, and may finally find its way into the breeding pen."

LONGWOOD (Average annual rainfall, 37in. to 38in.).

July 8th.—Present: 9 members and 14 visitors.

**SPRAYING.**—The monthly meeting of the Branch was held at Mr. Coles's residence, and, after an inspection of the Southern Cross Pottery Works and the homestead orchard, a pruning demonstration was given by Messrs. R. H. Lewis, W. P. Woolcock of Longwood, and Mr. Stone of Longwood. In the evening a paper dealing with the subject "Spraying" was contributed by Mr. R. H. Lewis. The speaker said he first intended to deal with the fungus diseases, of which fusicladium, or black spot, of the apple and pear was the worst that the growers in that district had to combat. The best remedy for the disease he considered to be pure solution of bluestone, which could be used on the trees during winter. If any application of that spray was made when the buds were just showing a tinge of pink color, the mixture should be diluted. He always used Bordeaux mixture, prepared as follows:—12lbs. of bluestone and 8lbs. of lime to 100galls. of water. If the spring proved very wet and rainy, another spraying could be given a fortnight later. Sulphur wash applied during October was also an excellent spray for black spot of the apple and pear, while lime sulphur, prepared by mixing 1gall. of the preparation to 30galls. of water was recommended for the destruction of red spider. If such diseases as those mentioned were prevalent in the district it was also advisable

spray the trees as a preventive, rather than wait until the trees were attacked and then use the spray in the hope of curing them. Referring to the insect pests, the speaker considered that the codlin moth was the worst of many that the growers in the Hills district had to deal with. He was convinced that spraying at the right time the moth could be kept in check, if not almost wiped out altogether. Some growers did not place a great deal of faith in a spray with arsenate of lead, but even if that spraying only washed a few of the eggs deposited by the moth, it would have done a great deal of good. The speaker stated that he made a practice of using 7lbs. or 8lbs. of lead to 100galls. of water, to make sure that it would kill the grubs. A calm cool day should be selected for spraying operations.

ROCKWOOD, August 7th.—Mr. H. E. Henley gave a very instructive account of his work, lectures, &c., given during the Winter School for Farmers at Roseworthy Agricultural College.

MORPHETT VALE, August 3rd.—Several questions dealing with complaints about stock were brought before the meeting. A member inquired whether it was better to harrow immediately after ploughing, or to allow the land to lie in rough. Members considered it better to allow the ground to lie in rough condition for a time before using the harrows.

MOUNT PLEASANT, July 14th.—Mr. C. Harding read a paper, in which he gave an interesting account of a recent visit he had made to Tasmania.

### SOUTH-EAST DISTRICT.

MILLICENT (Average annual rainfall, 29.25in.).

June 3rd.—Present: nine members.

SAMPLING POTATOES.—Mr. J. J. Guerin read the following paper:—There are many farmers in this district who can grow potatoes successfully, and the good they have gained throughout the State for Millicent tubers speaks for itself. I have had 20 years' experience in the growing of potatoes for local and city dealers, and during this term I have learned a good many different ways of sampling and preparing potatoes for market. I find that the most satisfaction is obtained by taking a good large sample, and by keeping out those particular sized potatoes that are found in every crop, and are generally classed as big seed. When keeping those out the grower has the satisfaction of knowing that he has two gains, instead of perhaps having two losses. For in the first place he is sure his consignment will give satisfaction, and in the second place his seed sample will be benefited by being of good size, whereas if the grower insists on adding middle-sized potatoes to his marketable sample he may suffer a rejection, and find that he has lost his best seed potatoes. I have carried out this system of sampling during the present season, and the result has been very satisfactory throughout. I find the following methods are also worthy of careful consideration by potato growers:—(1) Sew your bags well, and close, to prevent greening; (2) fill the bags tightly, and prevent rubbing, especially if you are digging the crop on the green side; (3) be careful and use clean bags. I prefer new bags. It pays to place potatoes on the market in a clean and tidy condition, as appearance is everything, and the farmer who does the work of growing and producing in the way I have indicated can always ask and receive top prices for his potatoes and allow himself a fair margin for cost of preparations for market. A discussion on the subject followed. In answer to questions, Mr. Guerin said he considered that, generally speaking, growers made a mistake in keeping only the smaller potatoes for seed purposes. It was far better to put the smaller-sized marketable sorts with the seed, and keep the large ones up to a really good sample. Both lots would thus be improved. It is a hard matter to get the diggers to make the sample what it should be, as naturally they were out to get every bag they could. Although more expensive, he thought it would pay the small grower to mix large and small when digging,

and sample the crops himself after carting from the paddock. The chairman said that in a year of scarcity and high prices buyers were glad to get potatoes of any description, but when prices were low it was only the prime sample that would command market rates. Mr. Haines maintained that it was necessary for farmers to obtain and retain a good name for their produce in city markets. Reference was made to the marked difference in price which had ruled in Adelaide last season between Victorian Carmens and Redskins from the South-East. Mr. Smith said that last year, owing to the good prices obtainable, some inferior samples of Redskins had been trucked from Rendelsham, with the result that a bad name had been given to that variety, and consequently they were not in demand this season, although other sorts were purchased readily. He had had good results with Carmens at Rendelsham this season. He supported Mr. Guerin's contention that growers were too ready to dispose of the best of their crops, and keep the small for seed. He was experimenting in that direction, and was convinced that it paid to select some of the best of the crop for seed. Tubers taken from a strong, vigorous plant were naturally more productive than those from a weak and spindly stalk. Mr. Guerin stated that an experiment in planting had given him the opportunity to compare the results of seed selection. From ordinary round seed three tons per acre had been obtained. Large cut seed had yielded four tons, and from large round seed five tons had been dug. The trial had been made in the same paddock and on the same class of land. Mr. Bell mentioned that he had obtained very good results from a small plot of Pinkeyes grown on his farm this season. The variety seemed well suited to the locality.

A further meeting was held on July 8th, when Mr. Downs read an extract from the *Journal of Agriculture*, "The Value of the Agricultural Bureau. A discussion also took place on the subject, "Registration of Bulls."

#### WIRREGA (Average annual rainfall, 19in. to 20in.).

July 15th.—Present: 10 members and visitors.

THE DISC PLOUGH FOR MALLEE COUNTRY.—The following paper was contributed by the Hon. Secretary (Mr. C. R. Williams):—"Since using the disc cultivating plough in this country I have several reasons for favoring it in preference to the mouldboard plough. Firstly, because I think we want an implement that will get over a good acreage a day, and thus save a lot in horsefeed. Secondly, for ploughing mallee country the disc is a big labor-saver as regards shoot-cutting, and by using the disc we will get rid of the shoots more quickly. If we were to fallow all the mallee land with the disc and work it two or three times during the year, we would find that the shoots would get very weak. This I noticed when cultivating my fallow, when quite 75 per cent. of the shoots were cut off clean at the stump. We would also get a much larger supply of hay and have a better chance of getting enough stubble to get a burn over the shoots."

FRANCES, June 24th.—Several matters of local interest, including storage charges for goods at railway stations, were brought before the meeting, and an interesting discussion followed.

On July 8th a Homestead Meeting was held at Mr. A. M. Herold's residence, when a pruning demonstration was given by Mr. H. H. Orchard (Orchard Instructor and Inspector for the South-East).

KYBYBOLITE, August 3rd.—Mr. Cother, sen., gave an address, "Dry Bile in Cattle," and stated that if the following licks were made up for the cattle there would not be any great danger of the animals contracting the disease:—1 part bonemeal to 8 parts of salt, and for a second lick 6lb. superphosphate and 6lb. of lime to 1 cwt. of salt.

PENOLA, July 15th.—Mr. J. Marcus contributed a paper, "Mixed Farming," and the officers were appointed for the ensuing year.

